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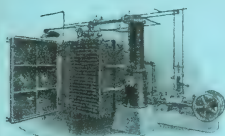
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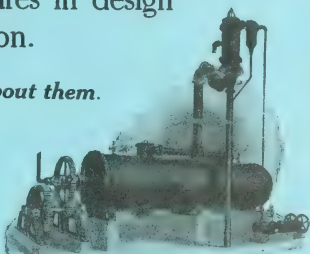


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Both Able and Willing.

AMERICAN income is \$352 per capita; her debt, \$68. One hundred dollars per capita would bring \$12,000,000,000 and still leave us solvent. That is why we face the Fourth Liberty Loan with optimism and enthusiasm.

AMERICAN RUBBER TRADE ATTACKED.

CERTAIN publications in England, notably the "Financial Times" and "Truth," are saying exceedingly bitter things against the American rubber trade. Noting them, our London contemporary, "The India Rubber Journal," states the case as follows:

"The excess raw rubber importation into the United States over and above the fixed ration has not yet been satisfactorily explained, and has provided food for much unfavorable discussion and comment in market circles. The usually well-informed financial correspondent of 'Truth' this week devotes his attention to the matter, and formulates an indictment against the American rubber industry which contains the essence of the market gossip. In order to ventilate the subject we reproduce his remarks below, and may perhaps go so

far as to say that some explanation is due from the American to the British rubber industry in order that any misunderstanding may be removed, and that the cordial relations which have ruled for so long be cemented."

Before replying fully we affirm that on the part of the American rubber trade there exists the most sincere and cordial feeling toward England. Her supreme sacrifices during the past four years in the defense of her heritage and ours, are fully appreciated and will never be forgotten.

As to the "indictment" in "Truth" which "The India Rubber Journal" cites, it begins:

"It would, of course, be as absurd as it is untrue to suggest that the United States Government has willingly become a party to a scheme, the object of which is to injure the British plantation industry."

This goes without saying. Why say it?

Continuing, "Truth" says:

"But that the Government import restrictions are being used to that end by a powerful and astute body of American manufacturers I have not the slightest doubt."

No such body exists: American rubber manufacturers buy for their own companies and not as a pool. Indeed their keen competition time and time again has forced the prices up to the advantage of the planter.

Still continuing, this is presented:

"For years it has been well known to the leaders of the rubber industry that American manufacturers—the consumers of two-thirds of the crop—are envious of our ownership of the Eastern plantations."

Here is a profound lack of understanding of American psychology. Few Americans spend time envying. Nor does the American rubber man have any feeling toward those who built up the planting industry but friendly appreciation. He realizes further that the work was not done from altruistic motives, and did not complain when during the rubber shortage a few years ago the planters got from him prices close to the three-dollar mark. Those same high prices, when he was on contract work, meant great financial loss, in some cases ruin, but he felt that the planter had a perfect right to sell for what he could get, and he paid without grumbling, and furthermore without any feeling against the English.

The indictment continues:

"At times, in fact, more or less open threats have been made that sooner or later they would make an effort to capture the plantations."

How does one "capture" plantations? By purchase? A "threat" to buy, granting that any financially responsible party made it, which we doubt, is not a crime. The seller need not sell. If he does, he gets value received. Furthermore the plantations would still doubtless remain on British territory, subject to British taxes and British laws.

Further on, this sin is laid on our shoulders.

"Year after year for the past seven years the Americans, as the largest buyers, have shown their power to control the price of this commodity. By first acquiring stocks, and then for a time standing out of the market, they have repeatedly been able to force timid and impetuous growers to sell their crops at low prices."

So this is wrong, or at least unethical? One wonders if the planter ever holds his rubber for higher prices or raises prices when rubber is scarce?

Continuing, this annoying accusation is made:

"These clever American buyers no doubt welcomed—probably asked for—the restriction and licensing of rubber imports as the finest opportunity of securing cheap rubber that has ever been presented to them."

The "clever buyers" neither asked for nor welcomed the government restrictions. Indeed they protested strenuously against them, for it meant and still means great curtailment of business, a very serious matter for all.

Further says this writer:

"The absurd suggestion that the country could effectively play its part in the war and cut down its consumption of rubber from 180,000 tons to 100,000 tons was unfortunately believed in certain quarters here."

Many Americans wish the suggestion were absurd. The long list of "non-essentials" in rubber no longer to be manufactured; the stopping of automobile manufacture; the elimination of hundreds of styles of tires; the discontinuance of hundreds of styles of rubber footwear; the rule that of the 1,100 types of water bottles only three shall be manufactured, are but a few of the items that go to show that rubber manufacture, and rubber use are being curtailed. And be it noted, every division of the trade, through committees, is working hard at the problem of cutting down on rubber in every direction, and doing it with enthusiasm.

Another paragraph runs thus:

"Even now it is not too late to save the situation. Let the Rubber Growers' Association face the facts, and look below the surface of these 'restrictions' to the unfair advantage the American manufacturer is taking of war-time conditions in attempting to secure control of the plantation industry."

By all means let the Rubber Growers' Association face the facts. They are these.

1st. The excess rubber importation can be easily accounted for. It is due to Colonial shippers, amongst them some very prominent English firms, forwarding large weights of rubber without an import license regardless of the fact that one was required.

Positive knowledge is now in the possession of the War Trade Board of considerably more than 5,000 tons so shipped and some of the best known English firms are implicated.

However, when this is used as a basis by some of our English friends to insinuate American manufacturers have deceived the United States Government and are bringing in more rubber than the program calls for, then it is about time to make it clearly evident who are

responsible for the excess importations over the prescribed schedule.

Here is a statement of the actual facts.

The amount of rubber actually licensed for importation by the Bureau of Imports of the War Trade Board from May 8 to September 23 was 34,044 tons shipping weight or, after making allowances for the shrinkage allowed on Brazilian rubbers, say 36,000 tons dry weight.

Therefore, the allocation program of 100,000 tons per annum is certainly being strictly lived up to.

Any weight beyond the above amount that has been shipped after May 8, is unlicensed rubber, cannot be entered for consumption until it is licensed, and when it is, it will apply against the schedule.

In other words, where provision is made for licensing 25,000 tons during the forthcoming quarter, not all of this by any means will leave overseas points.

The War Trade Board intends that this unlicensed rubber shall be taken care of. Consequently shipments from overseas during the next three months are likely to be slender indeed, particularly as the War Trade Board is not likely to deal leniently from this date, now that their import regulations are so well known, and any offender who persists in shipping without a license is liable to find himself in an uncomfortable situation.

Assuming that the importations of crude rubber during 1917 amounted to approximately 180,000 long tons, the actual consumption during 1917, as determined by a very careful census and backed up by sworn statements from substantially all the manufacturers, indicate an actual consumption of 330,653,640 pounds or say 147,613 long tons.

Stocks on hand and in transit to the United States,

December 31, 1917.....	67,535 tons.
Stocks on hand and in transit March 31, 1918.....	87,572 tons
Stocks on hand and in transit July 31, 1918.....	77,413 tons

During August and September, the output of pneumatic tires was limited to 50 per cent of the manufacturer's 1917 production. For the forthcoming quarter of October-December, the same restriction applies and in addition thereto the manufacture of more or less non-essential articles is to be either eliminated or heavily curtailed.

It is our best judgment that the total consumption during the forthcoming quarter will not exceed 32,000 tons against 25,000 tons to be licensed.

The reduction of 7,000 tons in stock can be sustained by reason of the heavy weights on hand and in transit, as indicated.

2nd. The news of American restrictions brought about a bear market in the Far East. Some American and some English rubber manufacturers doubtless purchased largely at low figures. They will have to store the rubber in a tropical country perhaps for years, a costly proceeding. They took a risk that the planter did not wish to take.

3rd. The American rubber industry is straining every nerve to win the war. Its best plants are already on war work; its best men are in war work, thousands of its young men are in the Army. It is giving up time, money and effort to the limit and gladly.

4th. The record of the American rubber trade in its crude rubber dealings is unsurpassed for unflinching fairness. At the beginning of the war England declared an embargo on crude rubber to keep it from the Central Powers. The American rubber trade through the Rubber Association agreed to buy only for its own uses and the embargo was lifted. The Association through its committees, its information service, and its legal advisers, saw to it that this agreement was kept to the letter. It involved the expenditure of thousands of dollars, the fighting of law suits instituted by Germans, and unremitting watchfulness. The result was that in spite of Teutonic money and ingenuity, so little rubber got away that figured in percentages it would be in the hundredths of one per cent. America did it for her own manufacturers, but it accrued to the signal advantage of the British planters at a time when the German and the Austrian market was closed to them.

In conclusion, "Truth" says:

"If there is to be a fight for control, by all means let the share-holder be told. He will play his part willingly and ungrudgingly, and so far from shrinking from the struggle I shall be surprised if he does not enjoy it."

Less than one per cent of the purchasers of plantation rubber in the United States have any financial interest in plantations in British possessions. Rubber shares are not listed or known in the United States. Of the rubber manufacturers in America 99 per cent do not know whether "Batu Caves" and "Vallambrosa" are tropical diseases or African lakes. Speaking of attempts at control when a resident of Shanghai approached American rubber interests with a project to corral the shares of all of the plantation companies registered there, he received not the slightest encouragement. It did not interest them, nor does the control of any set of plantations interest the American.

We realize fully that the rubber planting industry in the Far East is the favorite child of the British Empire. In the beginning, planting methods, "wound response," tapping and coagulating, were all discovered and developed by government experts. As the industry grew it was watched, guarded, disease fought, and assistance given, to a degree hitherto unknown in agriculture. Moreover taxes on the rubber produced were kept very low, so low that the world wondered. The growth of the planting interest was largely due to the tremendous development of the motor industry, and America became by far the largest customer. For years rubber that cost the planter 25 cents a pound was sold to the manufacturer never below \$1 and for a time for more than \$2 a pound, showing profits of 300 to 600 per cent.

The actual owners of the great and profitable planta-

tions are the shareholders found in all walks in English life. That Americans for a moment thought of trying to dispossess them is a statement wholly without basis of fact and comes from those who are friends neither of the American manufacturer nor the British shareholder. It is to the distinct advantage of the American rubber trader to keep the plantation industry of the Far East in its present capable hands, and it stands ready to do whatever lies in its power to help to that end.

The financial end of planting from the beginning rested primarily and chiefly in London. Here a host of promoters launched planting projects, bought and sold rubber shares, and made much money. These men were the objectors when a few, a very few, Americans purchased plantations of their own. They alone fostered the alarm concerning the "American invasion." They also were the objectors to direct buying, say between Singapore and New York, simply because their London commission was thus cut off. From them came floods of suggestions for curtailing plantation production, for the purchase of surplus stocks, for valorization, for working agreements with Brazilian exporters, all to keep shares abnormally high. Not for one moment did they consider the interests of their big customers or attempt to insure the future of the planter by giving such advantages that it would profit the buyer to remain a customer for all time. They took everything, gave nothing. They are the friends and protectors of none. During the "rubber craze" they unloaded barren properties, as "Filisola," on English widows and orphans without qualm.

The recent attack upon Americans in the London papers emanates, not from the planter in the East, nor from the British rubber trade, but from this financial set. It is designed to bolster prices of rubber shares, and is indifferent to facts, and callous as to its effect upon American or English feeling, or to the joy it will give the Germans.

That reputable English journals should publish its untruthful screeds, and practically stand sponsor for them, is incomprehensible.

THE TWO, THREE, AND PERHAPS NINE-HOLE GOLF COURSES that may be installed in the rear of the American Army on the Western Front promise to be the sportiest in the world. What with shell craters, ruined villages, barbed wire bunkers and various other Hun hazards, real golfers will have the time of their lives. A golf ball with iron cross markings would be hit with great accuracy and vigor.

THE AKRON RUBBER WORKERS' OATH OF ALLEGIANCE.

I will stick to my job and do an honest day's work every day for the duration of the war. So help me God.

THE BRISTOL RUBBER RIOTERS' OATH OF ALLEGIANCE.

I will throw up my job or do a dishonest day's work every day for the duration of the war. So help me Gott.

War News of the Rubber Industry.

Liberty Day, October 12 The Fourth Liberty Loan and the Rainbow Division. War Regulation of Rubber Footwear Production. Government Courses in Employment Management. Manufacturers of Compounding Ingredients Ask Priority. Colors of Canvas Shoe Fabric Limited. New Clothing Branch in the Quartermaster Corps. Textile Division Sections of the War Industries Board. Saves One Million Feet of Vacuum Cleaner Hose. From a Former Belgian Rubber Official. Coal Storage Limited. Stenographers and Typists Wanted by Government. Drive of \$170,500,000 for Welfare Work. Rubber Gas Bombs Dropped Over American Trenches. Improved Equipment Increases Number of Women Tire Workers. Waterproofers Organize to Speed Up Government Work. Skilled Mechanics for Air Service. Salvage of Rubber at the Front. Fixed-Price Contracts for Army Supplies. "Hypatia" to Aid Red Cross. Service Notes and Personals. Martyrs to the Cause of Liberty.

LIBERTY DAY, OCTOBER 12.

BY Presidential proclamation, October 12, the 426th anniversary of the discovery of America, has been proclaimed as Liberty Day in order to stimulate a generous response to the Fourth Liberty Loan. Every community is urged to commemorate the day by patriotic addresses, parades, pageants, etc., under the direction of the nearest Liberty Loan committee.

THE FOURTH LIBERTY LOAN AND THE RAINBOW DIVISION.

The Fourth Liberty Loan drive began in New York on the evening of September 27, although the scheduled opening of the drive proper was not until the following morning, with the blowing of sirens and whistles as a preliminary to the address of President Wilson at the Metropolitan Opera House.

Previous to this, however, the Rainbow Division of the Special Liberty Loan Committee of the Rubber Trade of Greater New York held a meeting in the afternoon at the Yale Club, presided over by F. E. Titus, the secretary of the committee. Addresses were made by J. N. Gunn, chairman of the Tire Division Committee; by Secretary of War Baker, and by Mr. Sachs, of Goldman, Sachs & Co.

On the morning of September 28, flag-raising exercises were held at City Hall, while two parades started, one south from 51st street and the other north from Bowling Green.

In the afternoon, a 12-passenger Caproni "bombed" the city with a ton of circulars urging subscription to the Loan.

The total amount for which the Fourth Loan is set is \$6,000,000,000, as tentatively proposed, on which interest will be paid at the rate of 4½ per cent. New York's quota for the Fourth Liberty Loan is \$1,800,000,000, or 30 per cent of the entire amount. Over \$200,000,000 was subscribed the first day. October 19 is the closing date for the receipt of subscriptions.

Books similar to the coupon books used in the Third Liberty Loan drive will be used again in New York City, this time to have \$2-receipts affixed by the receiving banks when subscribers make their payments. Subscribers are also urged to buy registered bonds, for protection, and hold them until maturity.

Further details of participation in the Fourth Liberty Loan drive by organizations connected with the rubber industry will appear in our November issue.

WAR REGULATION OF RUBBER FOOTWEAR PRODUCTION.

The Conservation Division of the War Industries Board in conference with representatives of the manufacturers, has authorized curtailment regulations and restrictions in the manufacture of rubber and tennis footwear, to become effective September 1, on tennis lines, and January 1, on rubber footwear.

The tennis lines had in a previous order been restricted to a few colors of duck fabric, the fancy colors and some excessive heights of boots being eliminated. In rubber footwear, the new schedule is claimed to eliminate, for the period of the war, 5,500 styles of rubber footwear, but the only way in which such a number can be reached is by counting duplicate lines known under different names by the competing manufacturers, and by counting each size and width as a "style."

The order restricts the introduction of new lasts other than as required by the Government or to meet changes in leather footwear styles. The manufacture of men's hip and sporting rubber boots is to be restricted to one grade only, and all duck boots to be discontinued as far as possible. Leather insoles in all boots will be discontinued. Women's, boys' and youths'

hip and sporting boots will not be manufactured at all. The manufacture of knee boots will be discontinued.

Reductions in styles include the limiting of first-quality and gaiters to men's sizes; and discontinuance of edge-quality all-rubber gaiters, "Omaha" arctics and excluders, misses' and children's snow excluders, boys' and youths' jersey-cloth arctics; motormen's gaiters for men; plow shoes; lumbermen's high-lace duck vamp with gum uppers; all two-buckle jersey cloth gaiters; men's one-strap (instep) sandals; all plain sandals and self-acting sandals and "croquet" with fleece lining (storm patterns not included); self-acting storm patterns; Russian rubbers, low vamp Alaskas (not storm patterns); boys' and youths' Alaskas; clogs; youths' self-acting sandals; all self-acting Alaskas.

Buckle gaiters are not to be made higher than the present 4-buckle height in men's, boys' and youths', and the 3-buckle height in women's, misses' and children's. The manufacture of jersey-cloth gaiters and Alaskas authorized is to be restricted to first and extra quality. Use of flour starch or similar finish is greatly restricted; cashmerettes or so-called heavy arctics or gaiters and canvas rubber-soled shoes are not to be varnished; dyed linings, except where fleece-lined, are to be discontinued. All use of caustic soda in the manufacture of rubber footwear is to stop.

It is estimated by the Conservation Division that this program will conserve, among other things, 29,012,600 cartons; 5,245,300 square feet of lumber; 1,526,493 square feet of shipping and storage space; 10,742,517 pounds of weight (freight) or 4,795 tons; 2,250,272 pounds of material that will not have to be dyed; 74,750 pounds of flour starch; 30,380 gallons of varnish; 125,300 pounds of tissue paper; 49,617 days' labor that may be diverted to more essential work.

GOVERNMENT COURSES IN EMPLOYMENT MANAGEMENT.

The Government has found it necessary to enter the field of industrial education on a large scale. War Emergency Courses in Employment Management, conducted by the Employment Management Division of the War Industries Board, under the auspices of five governmental departments, have been arranged for in nine leading universities in various parts of the country. These courses are designed to train men and women, who already have a basic experience of at least three years in industrial life and factory methods, and have therefore come in actual contact with shop problems. In these days every laborer must do the thing for which he is best fitted, and it has been proved that an experienced employment manager, in charge of all hiring and firing, comes very near to solving the labor problem. Manufacturers are expected to make the best use of the labor with which they are supplied, and it is through standardization of the services of an efficient central employment department that this is being accomplished in large plants. Employers of labor, particularly those having war contracts, are urged to suggest men or women from their own organizations as candidates. The courses run from six to eight weeks, and there are no charges, except the outlay for living expenses and about \$15 for books and supplies. Complete information may be obtained by addressing Captain Boyd Fisher, 717 Thirteenth street, N. W., Washington, District of Columbia.

The Hood Rubber Co., Watertown, Massachusetts; United States Rubber Co., New York City, and The Goodyear's Metallic Rubber Shoe Co., Naugatuck, Connecticut, were represented by students in previous courses, and among miscellaneous industries represented may be mentioned The Barrett Co., New York City, and the General Electric Co., Schenectady, New York.

MANUFACTURERS OF COMPOUNDING INGREDIENTS ASK PRIORITY.

The War Conference Committee of the Paint, Varnish and Allied Industries is presenting a memorial to the War Industries Board setting forth the claims of these industries to the right to be considered essential and thus be granted priority preference in fuel, labor and freight. Among the members of this committee well known to the rubber trade may be mentioned H. Gates for R. W. Evans of the Eagle-Picher Lead Co., Chicago, Illinois, representing the lead pigment industry; C. K. Williams of C. K. Williams & Co., Easton, Pennsylvania, and Henry C. Stewart of the Westmoreland Chemical & Color Co., Philadelphia, Pennsylvania, representing the dry paint and pigments industry; E. V. Peters of the New Jersey Zinc Co., New York City, representing the zinc oxide industry; C. L. Krebs of the Krebs Pigment & Chemical Co., Newport, Delaware, and S. B. Woodbridge of E. I. du Pont de Nemours & Co., New York City, representing the lithopane industry.

COLORS OF CANVAS SHOE FABRIC LIMITED.

The War Industries Board has decided after October 1 to limit the colors of dark fabrics for canvas shoes to the following, as represented on the Standard Color Card of America: Olive-brown, S-4856, cable No. 107, which represents the dark brown or tan.

Ecry, S-3183, cable No. 29 which represents the medium brown or tan.

All finished stocks of duck fabrics in the hands of fabric manufacturers and shoe manufacturers may be disposed of in the ordinary course of business. But on and after this date fabric manufacturers should produce for canvas shoes duck fabrics of only the colors recommended.

NEW CLOTHING BRANCH IN THE QUARTERMASTER CORPS.

The Quartermaster Corps announces the establishment of a new branch in the clothing and equipage division, which is to be known as the research and specifications branch. It will connect the procurement of supplies with their consumption and actual use, and will also pass on all specifications submitted by procurement officers. No departure from specifications in case of emergency will be made without the approval of the research and specifications branch.

The establishment of this branch is expected to prove of great value, not only to the Quartermaster Corps but also to the manufacturers and contractors who are supplying equipment for the Army.

TEXTILE DIVISION SECTIONS OF THE WAR INDUSTRIES BOARD.

What was formerly known as the supplies section of the Textile Division of the War Industries Board has been replaced by eleven sections. Following is a list of those of interest to the rubber industry, with their addresses in Washington, District of Columbia:

Rubber section, E. A. Saunders (advisory);
 Rubber goods section, A. W. Lawrence, chief, room 411, Quartermaster Corps Building;
 Cotton goods section, Spencer Turner, chief, room 39, Annex;
 Knit goods section, Lincoln Cromwell, chief, room 41, Quartermaster Corps Building.

SAVES ONE MILLION FEET OF VACUUM CLEANER HOSE.

Manufacturers of power-driven portable vacuum cleaners are cooperating with the Conservation Division of the War Industries Board by limiting their lines to not more than two models or sizes, by discontinuing less essential equipment, and by substituting other material for metal where the latter is not absolute necessary. It is estimated that these measures will result in the saving annually of 100 tons of steel, 125 tons of aluminum, five tons of brass, and 1,000,000 feet of rubber hose.

FROM A FORMER BELGIAN RUBBER OFFICIAL.

Major Leon Osterreith, formerly a prominent rubber merchant in Antwerp and delegate from Belgium to the International Rubber and Allied Trades Exhibitions of 1911 and 1914, now Belgian military attaché and chief of the Belgian military mission to this country, speaks with confidence and enthusiasm regarding the complete reorganization of the Belgian army while holding its line under fire at the front. Said he:

Without going into details, the Belgian Army has up-to-date infantry, cavalry and artillery; schools for officers and training camps for soldiers, as well as bombing, sniping, machine-gun, aviation, signaling and trench-mortar instruction centers.

The present Belgian Army, composed of six divisions, one cavalry corps, very powerful artillery of all caliber, numerous machine guns and up-to-date trench material and splendid flying corps, is stronger than ever, and impatiently awaits the order to advance.

COAL STORAGE LIMITED.

The tremendously increasing demand for coal for special war purposes in the eastern part of the country has made it necessary for the Fuel Administration to limit the amount of coal that industrial plants may carry on hand in storage in most states east of the Mississippi. That part of the bituminous steam coal schedule of particular interest to the rubber and allied non-preferred industries follows: Massachusetts, northern New York, 30 days; Rhode Island, Connecticut, eastern Ohio, lower Michigan, 20 days; southern New York, New Jersey, Delaware, eastern Pennsylvania, western Ohio, 15 days. State fuel administrators have authority to grant increased supplies in particular cases requiring special treatment, however.

STENOGRAPHERS AND TYPISTS WANTED BY GOVERNMENT.

Many stenographers and typists are still needed in the Government Offices at Washington, District of Columbia. Rubber companies can perform a patriotic service by making this known to their employees; by encouraging apt young women without the required training to undergo instruction at once, and, if possible, by assisting them in this. Full information and application blanks may be obtained from the secretary of the local board of Civil Service Examiners at the postoffice or customhouse in any important city.

DRIVE OF \$170,500,000 FOR WELFARE WORK.

With the approval of the War Department a combined non-sectarian drive for a war fund of \$170,500,000 for use in support of the seven organizations engaged in welfare work with the American expeditionary forces will begin the week of November 11. This sum will be divided according to the needs of each organization as follows: Young Men's Christian Association, \$100,000,000; Young Women's Christian Association, \$15,000,000; National Catholic War Council (including the Knights of Columbus and special activities for women), \$30,000,000; Jewish Welfare Board, \$3,500,000; American Library Association, \$3,500,000; War Camp Community Service, \$15,000,000; Salvation Army, \$3,500,000.

With the entire country behind this beneficent movement, the success of the drive may be confidently anticipated, and as in the past the rubber industry will do its full share.

RUBBER GAS BOMBS DROPPED OVER AMERICAN TRENCHES.

Interesting news items from the American army in France mention a German airplane flying over the sector northwest of Toul as having dropped rubber balls eighteen inches in diameter and filled with liquefied mustard gas. The effect of the gas was not serious, but the American troops were enraged by what they termed the "dirty warfare." These were probably the rubber-based bouncing bombs described in THE INDIA RUBBER WORLD of January 1, 1918, or a modification of them. Leather and rope were relied upon fully as much as rubber for the resiliency of the first of these German bombs, and the rubber used was, of course, either reclaimed, or synthetic and pro-

dured at great cost. After more than three and one-half years of warfare the rubber situation in Germany has become such that the production of munitions dependent on rubber will hardly become an increasing menace to the allied cause.

IMPROVED EQUIPMENT INCREASES NUMBER OF WOMEN TIRE WORKERS.

At the Morgan & Wright plant of the United States Tire Co., Detroit, Michigan, some 500 women are now employed in many departments where the work taxed the endurance of the able-bodied men who formerly did it.

Improved equipment, however, is constantly reducing the amount of physical exertion required by the various operations in tire building. For example, with the aid of a lifting jack—a



WITH THE AID OF A LIFTING JACK, WOMEN BECOME EFFICIENT TIRE-FINISHERS.

device developed from the idea of an employee—the physical effort required for the work in the finishing room has been reduced to such a degree that women are now employed on 3, 3½ and 4-inch tires.

The tires are brought into the department on trucks which are fitted with T-shaped steel uprights from which the tires are suspended. When the worker is ready to start on a new tire she approaches the loaded truck with a lifting jack. Upon turning a wheel at one side an arm is raised. This is guided under the nearest tire, lifting it off the T-shaped fixture on the truck. The lifting device, which is mounted on casters, is then pushed to the worker's bench; the tire is lowered, and transferred to the finishing bench. The plies of fabric and the gum strips are then applied by hand in the usual manner, rolled and the edges cut. The lifting jack is again used in removing the tire and placing it on a truck.

Women have completely replaced men in supplying stock to the workers in the finishing room. The coils of wire for pneumatic tire beads are made and soldered by women, also wrapped and trimmed. Many women are employed in the pocket department where pieces of fabric are taken from books about eight feet long, cut to the required length and stretched, one layer above another, over a large drum of equal circumference until a certain thickness is attained. These bands are then removed from the drum and conveyed to another department, where they are put over a tire core by men. As the books are too heavy for women to carry, men supply the workers as needed.

In other departments where women are employed the work is of lighter character. A number of women are engaged in cutting treads; several trim the uneven fabric edges from the rubber tread, while others cement the ends together; another group makes patches for repair kits; still others stamp sizes and names on inner tubes, and others work in the packing room where the

product is boxed. Numerous women are engaged as inspectors in various departments. As the finished casings are finally inspected they are sent to women who check their serial numbers and weigh each tire.

The vestibule school system of training has proved unsuccessful in the rubber industry, and it has been found preferable to train students among the other workers, as they develop and grasp efficient methods and short cuts more rapidly. Women are quicker to learn than men, and are taken out of the student class after six or seven weeks. Excepting the students, the women receive the same rate of pay as the men, but in the aggregate their earnings average slightly less.

Special rest and locker rooms are provided, to which the women may retire at any time. A matron is constantly on duty and aims to make the women feel as much at home as possible and to be with them during the luncheon hour.

WATERPROOFERS ORGANIZE TO SPEED UP GOVERNMENT WORK.

To speed up waterproofing work for the army, the waterproofers have formed an advisory body to be known as the Waterproofers' Committee of the Naval Consulting Board.

The members comprise V. G. Guinzburg, I. B. Kleinert Rubber Co., New York City; R. K. Goodlatte, T. R. Goodlatte & Son, Delaware, New York; W. B. Price, Price Fire & Waterproofing Co., Poughkeepsie, New York, and Herbert P. Pearson, general manager of the Cravenette Co., New York City, who is chairman of the committee.

SKILLED MECHANICS FOR AIR SERVICE.

The Air Service Division of the United States Army requires 4,000 skilled mechanics, between 18 and 56. Men qualified in the following trades are particularly sought: airplane mechanics, carpenters, coppersmiths, instrument men, motor cyclists, vulcanizers, blacksmiths, cabinetmakers, chauffeurs, fabric workers, truck makers, welders, propeller makers, motor mechanics, and machinists. Applications may be made any day between 8 a. m. and 5 p. m. to Lieutenant Billker, Room 902, 104 Broad street, New York City.

SALVAGE OF RUBBER AT THE FRONT.

At the Salvage Depot of American Supply Headquarters in France about 1,000 pairs of rubber boots and arctics are being salvaged daily. The salvage of all kinds of rubber articles was 99 per cent, or almost a complete saving of everything received. The value of the rubber salvaged last month was \$90,000. This includes the articles abandoned by the retreating enemy and by the Allied troops when hastily transferred and forced to leave extra clothing, etc., behind.

FIXED-PRICE CONTRACTS FOR ARMY SUPPLIES.

The War Department announces that wherever possible, fixed-price contracts will hereafter be the rule in the purchase of army supplies. In exceptional cases, where it is clearly to the advantage of the government, a cost plus fixed compensation contract will be made, subject to the approval of both the board of review of the particular supply bureau concerned and the Superior Board of Review of the General Staff.

"HYPATIA" TO AID RED CROSS.

J. H. Stedman of the Monatiquot Rubber Works Co., South Braintree, Massachusetts, has donated the "Hypatia" to the Red Cross, which will sell her and devote the proceeds to war work. Originally she was a full-rigged sloop measuring about 50 feet, with a 15-foot beam. In recent years a heavy-duty gas-engine was installed. At the beginning of the war, Mr. Stedman offered her to the Government for patrol purposes and she was temporarily accepted but later released as not needed.

SERVICE NOTES AND PERSONALS.

Dr. Lothar E. Weber, known to rubber manufacturers generally through his excellent work as consulting rubber chemist, is connected with the Conservation Division of the War Industries Board at Washington. As part of the program for conserving sulphuric acid, the Board for some time has been urging the substitution of nitre cake wherever possible. It was in furtherance of this work that Dr. Weber addressed the re-claimers at their meeting at Point Shirley not long ago.

Edwin H. Kidder, manager of the Boston branch of the United States Tire Co., has been given leave of absence that he may join the personnel board of the Emergency Fleet Corporation at Philadelphia. He will probably visit the various shipyards, and

later go to Paris for similar duties abroad. The United States Tire Co. will appoint a temporary manager to fill the position for the duration of the war.

Major M. C. Rector of the Medical Corps, now stationed at a base hospital in France with the American Expeditionary Forces, is a member of the executive committee of the Sterling Tire Corp., Rutherford, New Jersey. He has been decorated several times.

Major Frank R. Bacon, president of the Cutler-Hammer Manufacturing Co., Milwaukee, Wisconsin, which manufactures electric-control devices, has been detailed to Chicago as Assistant Ordnance District Chief of the Chicago District, and will have under his supervision all ordnance manufacture in northern Illinois, northern Indiana, Wisconsin, Iowa, Minnesota, North and South Dakota, and Montana.

Harry W. Bacon, manager of the Detroit office of the Dural Rubber Corp., Flemington, New Jersey, has been accepted for flying commission. He received his aeronautical training two years ago in Southern California.

Yvonne Caijo is a little French orphan living at Pluvigner, in the department of Morbihan, who since 1916 has been cared for by one of the staff of THE INDIA RUBBER WORLD.

Major H. Stuart Hotchkiss, Aviation Section, Signal Corps, has been relieved from further duty under the Director of Military Aeronautics and assigned to duty under the Director of Bureau of Aircraft Production.

Lieutenant C. S. Lewis, Jr., former editor of the "Goodyear Family Newspaper," has been severely wounded in France. He is the first commissioned officer from Akron, Ohio, whose name has appeared in the casualty lists, and he fought in the famous Rainbow Division. Although in a critical condition as the result of four bullet wounds in both ankles and one thigh, a speedy recovery is hoped for.

Dr. M. M. Harrison, head of the research department, has been granted leave of absence by the Miller Rubber Co., Akron, Ohio, to accept a captaincy in the Chemical Warfare Service, National Army.

Aviator Lieutenant Don Harris, a former employee of The Goodyear Tire & Rubber Co., Akron, Ohio, has been interned in Holland for the duration of the war, following his descent for repairs, after an attack by German anti-aircraft guns, when he was unable to get back to the American lines.

Alexander Dow, tire inventor and rubber man, is a captain

in the Ordnance Department and assigned to the Western Cart-ridge Co., East Alton, Illinois, in charge of matters pertaining to production, approval of contracts, and purchase of materials for plant extension.

Rawson R. Cowen, of the E. H. Clapp Rubber Co., Boston, Massachusetts, is now preparing for war service at the Artillery Officers' Training School, Camp Zachary Taylor, Louisville, Kentucky. Mr. Cowen is the son of the late Robert Cowen, of the Boston Hose and Rubber Co. He is a graduate of Harvard University, of the class of 1916, and has been on the force of the E. H. Clapp Rubber Co. since that year. Mr. Cowen is a husky individual, well fitted to do his bit for his country. He was a football player during his college days, and for three years was a member of the All-American team.

I. R. Martin, former athletic director at The Goodyear Tire & Rubber Co., Akron, Ohio, and well-known in college circles as an athletic trainer, recently entered the Massachusetts Institute of Technology, Boston, Massachusetts, to train as a seaplane operator. He has also been a student at Harvard and at William Jewell College.

D. Warren Boyer, of Trenton, New Jersey, who has been connected with the Philadelphia branch of the Ajax Rubber Co. for the past nine years, is now a chief petty officer aboard a submarine chaser. He is stationed at Pensacola, Florida, and is on duty in the Gulf of Mexico. He enlisted a year ago after spending some time in a training school at Columbia University, New York City.

MARTYRS TO THE CAUSE OF LIBERTY.

FIRST LIEUTENANT DAVID ENDICOTT PUTNAM, America's ace of aces, whose portrait appeared in the July number of THE INDIA RUBBER WORLD, was recently killed in action in the air over Limey, France, when he was attacked by seven German airplanes. He is said to have destroyed 20 enemy machines. In one action, he shot down five German planes within half an hour. He had been cited for bravery in United States official orders a number of times, and had been awarded the Croix de Guerre by the French Government. Lieutenant Putnam was a descendant of one of the oldest American colonial families. He is survived by his mother and three sisters. Lieutenant Putnam was a member of the class of 1920 of Harvard University.

The Great War takes its toll not only at the front but right here at home as well. A peculiarly sad case was the death of Howard Stokes Boyer, son of H. L. Boyer, secretary of the Joseph Stokes Rubber Co., Trenton, New Jersey. Young Boyer, who was but twenty years old and a fine upstanding boy, full of life and patriotism, had joined the Aviation Section and was in training in Massachusetts. To use his own words, he felt that he could make his "star shine brighter in aviation than in any other branch of the service." A friend of all, a brilliant student in the chosen line, assured of quick promotion, he was stricken with influenza and died in the hospital camp. He gave his life for his country, a hero, a patriot, and a martyr to the great cause.

Four more gold stars will be added to the service flag of The B. F. Goodrich Co., Akron, Ohio. Owen Hopkins, after being wounded in France and returned to Newport News, contracted diphtheria to which he shortly succumbed. George Minford is reported to have been drowned during a sea fight, and Thomas Wallace, to have been killed in action with the Canadian forces in France, while Oscar W. Zuelsdorf, a former inspector in Department 16-A, died in July as the result of wounds received in the trenches.



EDWIN H. KIDDER.



YVONNE CAIJO.



H. S. BOYER.

Corporal Vincent Matthews Bowes, formerly a member of the organization of the Sterling Tire Corp., Rutherford, New Jersey, in Syracuse, New York, recently was killed in action in France. He was with Company M, 104th Infantry.

SALE OF BREWERS' RUBBER GOODS TO CEASE.

On December 1, 1918, twelve hundred breweries in the United States, representing an investment of \$2,000,000,000, and employing 100,000 workers, will cease brewing operations for at least the duration of the war.

The list of rubber goods that will be affected by the Government's closing order is a large one and includes brewers' hose, power and conveyor belting, solid tires, packing, special gaskets, tubing, rubber boots and aprons, bottle brushes, sealing plugs and electric insulation. As tires comprise the largest item in this list, it is of interest to note that 3,600 trucks equipped with 21,600 solid rubber tires valued at \$1,620,000 are used in this industry.

While the loss of brewers' business would appear to be imminent, the fact that many brewing plants are to be turned into cold storage plants requiring motor trucks and mechanical rubber goods, is a redeeming feature. Moreover, the effect of business loss will be mitigated by Government priority orders for solid tires and mechanical goods that are keeping the manufacturers busy at present.

SOLID TIRES AT THE FRONT.

BASE depots, repair shops, anti-aircraft sections and workshops, and tire-press units are but a part of army transport service at the front; all are vital and must be kept going at all costs if supplies and munition replenishments are to be effectively distributed. This particularly applies when extensive battle operations are imminent and during the progress of the attack. In this connection it is well to call to mind the fact that motor transports saved the city of Verdun.

Of the most important sections are those for equipping vehicle

branches. The following are some of the equipment used in the motor transport branches.

It may not be generally known that a British concern in making the tire presses used for the equipment of the motor transport



(C. British Official.)

SOLID TIRES FOR BRITISH LOBBIES IN FRANCE.

branch of Uncle Sam's army. This particular press is like those used in the United States, but is stronger in various parts. The press is capable of giving 200 tons' pressure as against 150 tons in the standard press. The frame is made of stiffer material and the table is fitted with substantial guides, while a runway projecting from the center is fitted for lifting wheels and carrying them direct into the press itself, thus saving labor. ("The Commercial Motor," London.)

W. E. PALMER.

FROM a \$50 a month clerk to treasurer of the Goodyear Tire & Rubber Co., Akron, Ohio, a corporation whose sales for the past year exceeded the \$110,000,000 mark, is the record set by W. E. Palmer, whose election to treasurer of the company was announced at the last meeting of stockholders and directors. He succeeds F. H. Adams, who retired from the office after long service with the company but still remains a director.

Unlike many men who have left their native sections to seek their fortunes in distant cities, Mr. Palmer achieved his success in the county of his birth, for he was born at Hudson, Ohio, a few miles north of Akron.

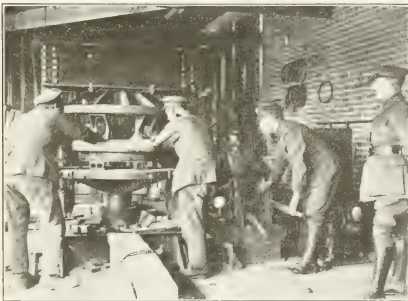
He entered the Goodyear organization in 1898. Those were the days when President F. A. Seiberling could often be found in the factory, superintending its operations. Here Palmer found him bossing a gang of workmen setting up a cutting table, and asked him for a job. He was employed at a salary of \$50 a month, and his duties embraced keeping books, billing, time-keeping, etc.

Palmer worked himself step by step up the ladder of success. In the words of president Seiberling, when announcing his election at the stockholders' meeting, "Palmer has advanced from \$50-a-month clerkship to the position of treasurer by sheer merit—without a pull, other than that of hard work and real ability."

Mr. Palmer was recently notified of his election to receive the 33d degree of Scottish Rite Masonry, the highest honor that the Masonic fraternity can bestow.



W. E. PALMER.



(C. British Official.)

BRITISH MILITARY TIRE PRESS AT THE FRONT, APPLYING A SINGLE SOLID TIRE.

wheels with new tires. As there are vast numbers of commercial vehicles in active service, there are many units solely engaged on this work. The length of life of rubber tires under the arduous conditions of running experienced in the war areas is short. The roads—for such they are called for want of a better name—play havoc with tire surfaces; and constant renewal is necessary. To effect this, mobile tire-press units are employed.

The illustrations herein will give some idea of the stock of tires that is held, as well as the type of hydraulic press

War Service Committee of the Rubber Industry of the U. S. A.

RUBBER manufacturers, importers and dealers received the following notification, dated September 14, from the War Service Committee:

Mr. H. T. Dunn, chief of the rubber section of the War Industries Board, directed your War Service Committee to immediately prepare certain vital statistics in order to lay before him and the entire War Industries Board the present state of the rubber industry and its willingness to restrict non-essentials and so warrant a classification of the industry as a whole in such priorities as will secure necessary (a) labor, (b) fuel, and (c) transportation.

The Committee as requested went to Washington on September 11 and made the presentation. We enclose a printed copy of the statements and suggestions made to the War Industries Board.

As a result of this conference, your Committee is glad to report that the War Industries Board expressed a willingness to place on the preference list, the rubber industry on the following conditions:

A. That all manufacturers pledge themselves to agree to the restrictions and to abide by the instructions of the War Industries Board.

B. That all members of the industry follow the rules and requests of the Conservation Division of the War Industries Board.

C. That members of the industry execute a pledge and agree to exact one from their customers as to the sale and use of rubber products.

D. The pamphlet enclosed does not embody the final conclusions of that conference but with some modifications of the suggestions in the pamphlet, the War Industries Board and War Trade Board will immediately promulgate full information as to priorities, allocation of rubber, elimination or restrictions of productions and the form of pledge that will be required.

The statements and suggestions referred to in the above letter, follow:

INFORMATION AND SUGGESTIONS PRESENTED TO THE WAR INDUSTRIES BOARD BY THE WAR SERVICE COMMITTEE OF THE RUBBER INDUSTRY OF THE U. S. A.

The War Service Committee of the Rubber Industry has been informed by H. T. Dunn, chief of the rubber section of the War Industries Board, that it should as soon as possible make suggestions for the elimination of the manufacture of all articles containing rubber or reclaimed rubber which can be curtailed or dispensed with, if only temporarily, without interfering with the necessities of war and war work.

The Committee was informed that the object in asking for these suggestions was to enable the War Industries Board to place the industry on a basis which would insure priorities for the manufacture of articles which are deemed essential.

The Committee desires to point out that rubber products are *mainly supplemental and not initiative to the industrial and commercial life of the country.*

A curtailment of activities of the country will reflect a corresponding reduction in the demand for rubber goods so far as they are used for the purposes involved.

Rubber products which are complete in themselves and not component parts can be classified so far as being useful or non-useful, and the latter class is relatively so small that a curtailment or elimination would not be a serious matter to the continuation of the industry as a whole but in some cases might create a hardship upon individual concerns which specialize in the manufacture of some article or articles which would not come under the useful class.

For convenience of analysis and control the industry may be divided into the following classifications:

2. Solid tires.
3. Medical and surgical rubber goods.
4. Mechanical rubber goods.
5. Rubber footwear;
 - (a) Boots and shoes.
 - (b) Rubber and shoe linings and soles.
6. Insulated wire.
7. Rubber clothing.
8. Waterproof cloth.
9. Hard-rubber goods.
10. Gas defense products.
11. Aircraft materials.
12. Reclaimed rubber.
13. Miscellaneous not included in above.

The above classifications cover the entire industry and Exhibit A is appended which shows the relative importance of each branch in the consumption of rubber and reclaimed rubber; also the approximate percentage of cost of labor and power to the total cost of each group.

The Committee is informed that the Government's method of cooperating with the rubber industry will now take the form of granting priorities for rubber, other materials, labor and fuel only for useful purposes.

The Committee desires to endorse heartily this method of control and to express the belief that it can be of material help to the War Industries Board in establishing a proper balance between too much or too little restriction.

CONTROL OF INDUSTRY.

It would be impossible to enumerate the various articles produced by the industry and it seems to the Committee that the only practical method of control is to determine first the status of as many branches and individual articles as possible, and for everything else to define the *uses* for which rubber articles may be produced.

This would immediately stop production of all goods which are not upon the approved list or are not necessary for the uses which have been approved.

This ruling would form a drag-net into which would fall thousands of articles which would require classification into useful or non-useful, or, in other words, articles which will or will not be allowed to be produced in whole or in part.

The following uses are suggested for which rubber goods are a necessity and the production of which should be allowed to the extent that the various activities are allowed to operate:

1. All rubber products necessary for filling government orders.
2. Red Cross requirements.
3. Athletic goods.
4. Rubber supplies for all activities permitted whether required for finished products or for the operation of the activity.

EXAMPLES.

Railway supplies.	Coke plants.
Ship yard and ship building supplies.	Chemical plants.
Supplies for factories.	Foundries.
Supplies for agriculture.	Cotton and woolen mills.
Supplies for food and feed.	Paper mills.
Mining supplies.	Tanneries.
Supplies for oil wells and refineries.	Manufacturers of leather boots and shoes.
Fire hose.	Supplies for telegraph, telephone and express companies.
Lumber production.	
Automobile manufacturers' supplies.	
Supplies for electrical industry.	

(See Exhibit B.)

A few rubber articles may be used by such a classification of industrial activities which might be dispensed with and a careful analysis must be made.

The following divisions of the industry would come under the above control of allowing rubber articles to be produced only for approved uses: mechanical rubber goods, hard-rubber goods (see Exhibit C), and miscellaneous not included in any other division.

The remaining divisions would be:

CLASS DIVISIONS:

The Government's Use:

1. Pneumatic tires of all kinds
 - (a) For automobiles.
 - (b) For motor cycles.
 - (c) For bicycles.

AIRCRAFT.

The Government Only.

INSULATED WIRE.

This division committee of the War Service Committee of the Rubber Industry is practically the same as the Wire and Cable Committee of the Electrical Manufacturing Industry. It is suggested that the Wire and Cable Committee is better qualified to handle this branch of the rubber industry for the War Industries Board. Rubber manufacturers making insulated wire would then come under whatever regulations were determined upon, if any.

ATHLETIC GOODS.

The Committee suggests that no curtailment be placed upon the production of these goods. They form an unimportant part of the industry, but contribute largely to national health and physique.

SOLID TIRES.

Viewed broadly this branch of the industry is practically 100 per cent essential, and at present the Government requirements are taxing the production facilities to such an extent that stocks are automatically being reduced.

RUBBER FOOTWEAR.

(a) Boots and Shoes.—There are twelve manufacturers in this division and all are working on government orders to such an extent that civilian requirements cannot be supplied. Next winter will probably see a shortage of rubber footwear for civilian use; so in this division there is even greater curtailment than may be desirable.

(b) Rubber and Fiber Heels and Soles.—These goods are made from rubber and fiber compounds and replace leather. They will outwear leather at least two to one. Many millions of people are dependent upon them.

(See Exhibit D.)

EXPORT.

This is not included in the list of divisions of the industry, but the Committee understands that it is the desire of the Government to conserve and promote, wherever consistent, foreign trade—first, in order to maintain the foothold in foreign markets secured at considerable expense; second, to correct unfavorable exchange rates and to liquidate, by means of trade, unfavorable balances; and, third, to bring in gold.

If the understanding of the Committee is correct, it would appear desirable to continue uninterruptedly the export of rubber products subject to the control of the War Trade Board. A ruling is therefore requested with reference to export business.

RECLAIMED RUBBER.

This branch of the industry is entirely dependent upon rubber manufacturers for its existence. It is composed of several independent units and reclaiming departments of rubber manufacturers.

Any curtailment in production of rubber goods will automatically curtail production of reclaimed rubber.

The Committee desires to point out that the use of reclaimed rubber in the manufacture of rubber goods is one of the most important items of technique in the industry. Economy and competition are sufficient incentives for its use, and any further attempt to force its consumption would result in unsound practice.

RUBBER CLOTHING.

A large percentage of the production of rubber clothing is taken over for the needs of the Government, and plans for standardization of what is made for civilian use are now under way. Waterproof clothing, being used as a protection from the elements, comes under relatively the same class as rubber footwear, although the demand is not so great, nor are the stocks in the country so small.

MEDICAL RUBBER GOODS.

The principal articles produced under this classification in volume of production are hot-water bottles, fountain syringes,

and surgeons' gloves. The production of surgeons' gloves at the present time is very largely for the use of the Medical Departments of the Army and Navy.

There are numerous other articles under this general classification, all of which are essential for the sick-room or necessary to the health and well-being of the people, but in no one item is the production of unusual volume. The production of water bottles and syringes has been along rather extravagant lines, owing to the large variety of styles and types manufactured, but this number has been greatly reduced, as per report filed with the Conservation Division.

WATERPROOF CLOTH.

Aside from hospital sheeting, which is used in all hospitals and in many homes, the greater part of the production of waterproof cloth goes into the various lines of industry, where it is cut up and used in manufacturing articles of common use. Several examples are as follows:

Tobacco Trades.—Waterproof sheeting is used for covering, sweating, curing and handling tobacco, and is also used in making aprons for the production of machine-manufactured cigars and cigarettes.

Piano and Organ Trade.—Various qualities of waterproof and airtight cloth are manufactured for small and large bellows of player-pianos, as well as for organs.

Cameras.—Light-proof rubber-coated cloth is used for extension bellows in cameras, also for focusing purposes.

Automobile Tops.—Automobile material is manufactured in large quantities for the production of new tops for automobiles, and in small quantities for repairs and replacements of old tops.

Hat Trade.—A limited quantity of rubber-coated material is used by hatters for the forming of straw and felt hats.

Engraving and Printing.—Rubber-coated cloth is used in printing establishments wherever fine engraved printing is done, such as bank notes and stock certificates, and a considerable quantity is used by the government printing works.

Cutting Trade.—A limited quantity of light-weight, waterproof material is used for the manufacture of small articles, such as nursery sheets, diapers, dress-shields, acid sleeves, money clips, etc. It is also used for the manufacture of children's bath tubs.

Proofers.—A large quantity of cloth is waterproofed for the use of manufacturers of mackintosh clothing who have no rubber mills.

PNEUMATIC TIRES.

This branch is the most important in the industry. It is suggested that, for the purpose of allocation and priorities, casings and tubes be considered as one article. Demand will automatically regulate a balanced production, as one is useless without the other.

The War Service Committee understands that it is desired to curtail pneumatic tire production to the lowest point which will still preserve the structure of the industry. In this connection it is to be noted that the production of tires in the present volume is of recent origin and is represented by many units varying from large to medium and small. Roughly classified it may be stated that there are five large tire manufacturers, seven medium-sized tire manufacturers, and about 100 small tire manufacturers.

The daily production based on 265 working days for 1917 was, for the so-called large, from 9,800 to 21,600 tires per day; for the so-called medium, from 1,300 to 3,600 per day; for the so-called small, from 10 to 1,000 per day.

Many of the so-called small manufacturers are not yet well-established and are dependent upon maximum capacity to meet obligations. Any drastic curtailment will threaten the existence of some of these so-called small units and this is accentuated by the possibility that they will be unable to compete for government business. It is therefore apparent that it would not be ethical for the War Service Committee to recommend a minimum point of production which would still preserve the structure of the industry, inasmuch as this would actually provide for the ruin of some of the units, and the Committee does not feel it should be asked to take this responsibility.

Now that a rubber section of the War Industries Board has been established, the Committee feels it should no longer be asked to make recommendations, but should confine its work to procuring and presenting information asked for, as well as keeping the Board fully posted on current conditions of the industry.

The War Industries Board is now in a more favorable position than the Committee to form an intelligent opinion regarding the

amount and regulation of future allocations in respect to the manufacture of pneumatic tires.

The committee presents the following information to guide the Board in determining the necessary production to provide for present and future needs to conform with the general policy controlling the use of automobiles.

BASIS—50 PER CENT OF 1917 PRODUCTION.

	Total number produced.	Number per day, (365 days per year)
Production, 1917.....	25,300,000	69,315
50 per cent curtailment.....	12,650,000	34,657
Present consumption, estimated.....	24,500,000	67,123
Net loss per day.....	34,660	3,000,000
Manufacturers' stocks on hand July 31, 1918.....	4,500,000	
Dealers' stocks on hand July 31, 1918, estimated.....	3,000,000	

Total stocks on hand July 31, 1918, estimated..... 7,500,000

At the above rate of production and consumption, stocks will theoretically last 231 days, making complete exhaustion the latter part of March, 1919.

A shortage throughout the country will be felt during the middle of November, 1918.

Unbalanced stocks require a considerable anticipation of above dates.

BASIS—50 PER CENT OF 18 MONTHS' PRODUCTION.

(JANUARY 1, 1917, to JUNE 30, 1918.)

	Total number produced.	Number per day, (365 days per year)
18 months' production.....	37,050,000	67,671
50 per cent curtailment.....	18,525,000	33,835
Present consumption, estimated.....	24,500,000	67,123
Net loss per day.....	33,288	3,000,000
Manufacturers' stocks on hand June 30, 1918.....	4,500,000	
Dealers' stocks on hand June 30, 1918, estimated.....	3,000,000	

Total stocks on hand June 30, 1918, estimated..... 7,500,000

At the above rate of production and consumption stocks will theoretically last 225 days, making complete exhaustion the middle of March, 1919.

A shortage throughout the country will be felt during the first part of November.

It is pointed out that, long before the point of exhaustion is reached, there will be a shortage throughout the country. Due to the various sizes and styles with which cars are equipped and the necessity of carrying these at available points in order to give prompt delivery and thus prevent owners from hoarding private stocks, it is estimated that when total stocks of manufacturers and dealers reach a minimum of 4,000,000 tires a shortage will be felt. This figure includes tires in transit which would total at least 750,000 to supply the country's present requirements.

The stock requirements would, of course, become less in relation to the restricted use of automobiles.

EXHIBIT A.

Article	Pounds of Rubber consumed in 1917.	Reestimated Rubber consumed in 1917.	Percent of age of 1917.	Percent of age of 1918.
Automobile pneumatic casings.....	170,991,631	23,208,873		
Automobile pneumatic tubes.....	37,547,640	855,609	15	
Motor and bicycle tires and tire casings.....	6,305,449	6,199,427		
Solid tires.....	26,176,513	6,789,200	7	
Total tires and tubes.....	247,021,233	47,053,169		
Mechanical rubber goods.....	31,743,880	71,568,850		
Boots and shoes.....	28,726,118	35,808,401		
Insulated wire and insulating compounds.....	6,011,388	1,902,071		
Druggists' and stationers' sundries and surgical rubber goods.....	8,359,937	304,094		
Waterproof clothing, including carriage cloth and rubber sheeting.....	3,562,833	11,064,326	20	2
Waterproof cloth, including single and double texture.....	1,310,694	999,289		
Hard rubber goods.....	2,610,544	4,845,968		
Rubber cement.....	3,275,676	18,663		
Miscellaneous, not included in any of the above schedules.....	4,031,341	4,533,447		
Grand total.....	330,653,644	195,968,188		

EXHIBIT B.

MECHANICAL RUBBER GOODS.

This branch of the industry is very important and includes many thousands of articles of great diversity. They may be generally subdivided into the following classifications:

- | | |
|-------------------------------|----------------------------------|
| 1. Belting. | 8. Friction tape. |
| 2. Rubber hose. | 9. Air hoses. |
| 3. Packing. | 10. Rubber thread. |
| 4. Cotton rubber-lined hose. | 11. Tubing. |
| 5. Mats, matting, and tiling. | 12. Lathe and hand rubber goods. |
| 6. Molded goods. | 13. Springs and bumpers. |
| 7. Heels and soles. | 14. Miscellaneous. |

The following is a partial list of articles used for essential purposes:

SUPPLIES FOR FACTORIES, MACHINERY AND MATERIALS NEEDED IN PRODUCTION AUTHORIZED BY THE GOVERNMENT.

Rubber thread for elastic web manufacturers and airplane shock absorber cords, blankets for printing presses; all kinds of packings, hose, belting, moulded goods and rubber-covered rolls for coke plants, cement plants, stone quarries, powder plants, steel mills, nitrate plants, foundries, cotton and woolen plants, tanneries, paper mills, and all classes of essential factories.

SUPPLIES FOR AGRICULTURE.

Thresher belts,
Suction hose,
Water hose,
Packings,
Steam hose.

SUPPLIES FOR FOOD AND FEED.

Grain elevators, mills, packing houses, etc., and also supplies for canning and preserving.

Elevator belts,
Conveyor belts,
Fire hose,
Packings,
Air rings,
Synthetic rubber,
Transmission belts,
Hoe scraper belts,
Molded goods,
Valves,
Hot-water tubing,
Large number of special moulded articles for sugar plants.

RAILWAY SUPPLIES.

Air-brake hose,
Car-braking hose,
Engine and tender hose,
Fire hose,
Air and pneumatic tool hose,
Steam hose,
Water hose,
Axle dynamo belting,
Air-brake gaskets,
Throttle packing,
Air-pump packing,
Piston and pump packings,
Sheet packings,
Valves,
Spurt hose,
Step treads,
Tiling.

SHIPS, SHIPYARDS AND SHIP BUILDING SUPPLIES.

Packings,
Deck hose,
Air and pneumatic tool hose,
Steam hose,
Suction hose,
Oil hose (for oil burning boats),
Fire hose.

MINING SUPPLIES.

Elevator belts,
Conveyor belts,
Transmission belts,
Air hose,
Steam hose,
Water hose,
Vanner belts,
Packings,
Valves,
Molded goods,
Fire hose.

SUPPLIES FOR OIL WELLS AND REFINERIES.

Driller belts,
Transmission belts,
Oil hose,
Water hose,
Suction and discharge hose,
Steam hose,
Stuffing-box rings,
Packer rubbers,
Swab rubbers,
Cups,
Pipe rings,
Packings,
Fire hose.

LUMBER.

Belts,
Hose,
Packings.

AUTO MANUFACTURERS' SUPPLIES.

Radiator hose,
Molded goods,
Brake lining.

LEATHER BOOT AND SHOE MANUFACTURERS.

Belting,
Cements,
Coated fabrics,
Hose,
Packings.

ELECTRICAL INDUSTRY.

Tape,
Matting,
Hard-rubber goods,
Belting hose and packings.

SUPPLIES TO TELEGRAPH, TELEPHONE AND EXPRESS COMPANIES.

Tape,
Hard-rubber goods.

EXHIBIT C.

HARD RUBBER.

This division of the industry is separate and distinct from the others, inasmuch as its products represent an entirely different finished material.

INDUSTRIAL RUBBER ARTS

5. Hard-rubber combs.
6. Hard-rubber accessories for medical and surgical goods.
7. Pipe bits.
8. Fountain-pen parts.
9. Automobile accessories.
10. Buttons.
11. Pipes for conducting chemicals.
12. Receptacles for powder mills.
13. Buckets for handling acids in chemical plants and powder mills.

In addition to these there are thousands of miscellaneous articles made from hard rubber which cannot be classified.

Production of the following hard-rubber articles has already been discontinued by the principal manufacturers:

Barrel handles.	Funnels.
Hairpins.	Caustic holders.
Pen holders.	Pocket flasks.
Brush backs.	Tumblers.
Bowling balls.	Cork-screw handles.
Rouge balls.	Beer scrapers.
Duck pin balls.	Beer shakers.
Cigar and cigarette holders.	Drug scoops.
Rulers, inkstands.	Suppositories.
Stethoscopes.	Thimbles.
Ear trumpets.	Tattoo shuttles.
Teething rings.	Embroidery hoops.
Match boxes.	

EXHIBIT D.

INDUSTRIAL RUBBER ARTS

Uses.—Rubber heels and fiber soles are used in large quantities in the construction of new shoes and in the repair of old ones.

In the last year approximately 75,000,000 pairs of rubber heels and 15,000,000 pairs of fiber soles were made and used in the United States alone.

It is also an important material for leather and both give longer service than leather soles and heels, respectively.

Rubber heels and fiber soles are used largely by working people who stand upon their feet or walk while at work.

Economies.—Shoes either made or repaired with rubber heels and fiber soles are cheaper to the consumer than with the corresponding leather parts.

Fiber soles have enabled the manufacturer of shoes to market a serviceable product at a price within the reach of the laboring classes.

Fiber soles and rubber heels will wear from two to three times as long as corresponding parts made from leather employed for similar purposes.

Consequently there is great economy both in labor and in materials in the making and use of rubber heels and fiber soles, for where heels and soles of leather are used they must be removed and the shoes repaired two or three times as often as where the rubber heels and fiber soles are used.

Moreover, there is an initial saving in labor, since it requires less labor to produce rubber heels and fiber soles than to produce heels and soles of leather.

About fifty per cent of the labor used at present in the producing of rubber heels and fiber soles is female labor.

There is a saving in steel (approximately 50 per cent) in the use of the rubber heel. First, because it requires fewer nails to attach the rubber heel and, second, because a set of nails employed to attach a rubber heel is used through the lives of two or three sets of nails employed in attaching any other type of heel.

Rubber heels and fiber soles are made largely from by-products, including reclaimed rubber, which by-products do not occupy ship space. There is an adequate supply of such by-products available which is not needed in the production of more essential articles.

If the production of rubber heels and fiber soles was curtailed, leather would be substituted therefor and additional leather for this purpose must be imported and, therefore, occupy much ship space.

Fiber soles and rubber heels are waterproof and eliminate the necessity of using rubber shoes on many occasions.

Precedent.—Great Britain has found it advisable to encourage the making and use of rubber heels and fiber soles during the war.

THE RUBBER INDUSTRY AN ESSENTIAL INDUSTRY OF CLASS C-4.

THE following letter of September 23 was addressed to the rubber industry by the War Service Committee:

The War Service Committee of the Rubber Industry of the United States presented a brief on Wednesday, September 11, 1918, to the Priorities Division of the War Industries Board with the object of having the industry placed upon the preference list.

The Priorities Division has expressed its confidence in the good faith of the rubber industry and subject to its agreement to fulfill all requirements of the War Industries Board and the War Trade Board has designated it an essential industry with a classification of Class C-4.

A bulletin, issued by the War Industries Board, designating the classification of the rubber industry and a pledge to be signed by each manufacturer is printed below. No manufacturer will be entitled to priorities on the preference list until he has signed the pledge.

WAR INDUSTRIES BOARD PRIORITIES DIVISION.

CIRCULAR No. 24.

For the Rubber Industry.

The Priorities Division of the War Industries Board, after conference between your representatives and the undersigned with other representatives of said board, has considered the status of your industry and its claims for general preferential treatment and for priorities in obtaining its supply of materials, and has reached the following conclusions:

1. A large part of the production of your industry is essential either for direct or indirect government uses or to supply necessary industrial and civilian requirements. That is, because of the essential character of your industry, which in the national supply of fuel, transportation, labor and material should be eliminated. The representatives of your industry have signified to the Priorities Division the willingness of the industry as a whole to strip itself of this non-essential production, and in its remaining production to limit itself to supplying only the output required and to limit all practical measures which will tend to conserve and protect such material, labor, fuel and transportation.

The Priorities Division believes that if the production program herein-after outlined is adopted and faithfully observed, the industry as a whole may be said to be engaged in essential production under conditions entitling it to preferential treatment in obtaining its supply of fuel, labor and transportation, and to proper priority assistance in obtaining its supplies of material.

1. Each manufacturer shall conserve to the greatest possible extent raw materials, fuel and labor; shall eliminate from its production unnecessary or undesirable types, sizes and styles of articles; and particularly shall observe and comply with any conservation plan promulgated or approved by the Conservation Division of the War Industries Board.

2. Each manufacturer shall limit its production of each and every article and item of production as near as may be to the current demand therefor; shall carry stocks only in amounts reasonably necessary to insure the supplying of current demand; and shall refrain from hoarding fuel, raw material, finished or semi-finished products.

3. Each manufacturer shall limit its items and amounts of production for export to those covered by export licenses issued by the War Trade Board.

PRODUCTION PROGRAM.

4. Each manufacturer shall, as soon as possible after completing the manufacture of an article, place it in production or in a conservation program production all articles for which there is no essential use; and particularly all articles designated or listed as of such a character by the War Industries Board.

5. No manufacturer shall produce or deliver any article except for such essential uses as may be designated from time to time by the Priorities Division of the War Industries Board, and for the present to include the following general uses:

(a) For filling government orders and orders of the American Red Cross.

(b) For furnishing supplies to railroads operated by the United States Railroad Administration.

(c) For furnishing necessary supplies to preferred industries and plants, as the same are included from time to time upon the preference list of said Priorities Division.

(d) For furnishing necessary supplies to those industries not listed upon the preference list, but preferred by the said Priorities Division to be more or less essential and allowed to operate under a curtailed or controlled production program; but only to the extent that such supplies are necessary to enable any such plant to produce in accordance with such program.

(e) For civilian clothing and footwear (boots and shoes, rubber and fiber heels and soles), to the extent of the present production and to supply current demands only; the manufacturer to encourage conservation and economy by the public.

(f) For medicinal and sanitary purposes; to the extent of the current demand and subject to strict conservation with priorities as the same are announced or approved by the Conservation Division of the War Industries Board.

6. Using as a basis the production of automobile casings and tubes under six inches for the eighteen months ended June 30, 1918 (not including those invoiced on direct government orders during the same period), the maximum production of such articles by each manufacturer for the last three months of 1918 is fixed at 3 1/2 of 50 per cent (measured both

by number of units and amount of rubber consumed. The maximum annual production for said eighteen months' period; provided, however, that such maximum production may be increased to the extent of such castings and tubes produced on direct orders from any agency of the United States Government; and provided further, that in the case of tire manufacturers whose plants were not in operation previous to January 1, 1917, but were in operation previous to January 1, 1918, such maximum production of each such manufacturer for the last three months of 1918 shall be one-half of 50 per cent of its production during the period January 1, 1918, June 30, 1918.

No restriction will at the present be placed upon the production of castings, or of tubes, or of tires, other than as described in the paragraph next hereinabove, except that such production shall not exceed that required to fill the current demand therefor.

Each manufacturer shall file with the Priorities Division of the War Industries Board with respect to the character and extent of its production and operations.

Each manufacturer shall file in the form following:

MANUFACTURER'S PLEDGE.

Priorities Division, War Industries Board,
Washington, D. C.

The undersigned hereby pledges itself not to use, nor so far as lies within its power permit to be used, any products of its manufacture now in or which may hereafter come into its possession or control save for the essential uses as set out in the paragraph next hereunder, until such time as it shall be directed by the Priorities Division of the War Industries Board, or (b) under permits in writing signed by or under authority of such Priorities Division.

(2) that it will make no sale or delivery of any such products to any customer for resale until such customer has filed with it a similar pledge in writing signed by or under authority of the Priorities Division; to insure that its products shall be distributed solely for essential uses; provided that the provisions of this subdivision of this pledge shall not, until further order of the War Industries Board, apply to castings and tubes under six inches; (3) that it will in all things strictly observe and comply with the production program for rubber manufacturers as the same is set out in Circular No. 24 issued by said Priorities Division under date of September 21, 1918, and will limit and curtail its production, eliminate the production of non-essential articles, and adopt conservation measures and programs as provided in such circular; (4) that it will observe and comply with all other or further rulings and orders of the said Priorities Division; (5) that it will make and render at such time or times as may be designated any report or reports concerning its production and activities as may be required by said Priorities Division or the Rubber Section of the War Industries Board.

No manufacturer shall make, sell or deliver any of its products to any customer for resale until such customer has filed with it a pledge in writing in the following form:

CUSTOMER'S PLEDGE.

I, ———

The undersigned hereby pledges itself not to use, nor so far as lies within its power permit to be used, any products of your manufacture now in or which may hereafter come into its possession or control save for the essential uses as set out in the paragraph next hereunder, until such time as it shall be directed by the Priorities Division of the War Industries Board, or (b) under permits in writing signed by or under authority of such Priorities Division, provided that the provisions of this pledge shall not, until further order of the War Industries Board, apply to castings and tubes under six inches; further that it will make no sale or delivery of such product to any customer for resale until such customer has filed with the undersigned a pledge similar to this.

The Priorities Division, believing that compliance with the above program will eliminate from the production of rubber manufacturers substantially all non-essential production, and according the assurances of the representatives of the industry that such program will be immediately put into effect, has certified the industry as a preferred industry, giving it a rating as Class A. This action will entitle the industry to preferential treatment in its supply of fuel, labor and transportation in the manner and to the extent explained in the "Foreword" to Preference List No. 2 issued by said Priorities Division as Circular No. 20 under date of September 3, 1918.

If, however, any rubber manufacturer shall (a) fail to file within fifteen days from the date of this circular its written pledge as hereinabove provided, or (b) fail to observe and comply with any of the terms or conditions of the program as herein set out, or with any of the terms or conditions of its written pledge, said manufacturer will forfeit its right to preferential treatment under the general listing of the industry as a whole, and will be certified to the various government agencies controlling the supply of labor, fuel and transportation as having so forfeited its right to preferential treatment.

By virtue of the placing of the industry on the preference list rubber manufacturers will be entitled, in obtaining their supply of raw materials or finished or semi-finished products, to an automatic Class C rating under the terms and provisions of Circular No. 4 of the Priorities Division of the War Industries Board, dated July 1, 1918. If for any reason the manufacturer is unable to obtain materials under such automatic Class C rating, he may apply to the Priorities Committee for a higher rating by priority certificate and said application will be given proper consideration.

The Priorities Division relies upon the rubber industry and each and all of the plants constituting the same to faithfully and conscientiously observe and comply with all of the terms of the program herein set out, and to cooperate wholeheartedly with the government in its efforts to conserve and most effectively use the nation's supply of material, labor, fuel and transportation, to the end that the full strength of the nation may be mobilized in the most effective manner and directed into the most effective channels for the accomplishment of the one great common purpose—the winning of the war.

Very truly yours,

W. S. C. QUESTIONNAIRE NO. 19-B.

Washington, D. C., September 1, 1918.

R. K. P. QUESTIONNAIRE NO. 19-M.

This questionnaire was sent to manufacturers September 23, at the request of the War Trade Board for information as to the stocks of crude rubber, including jelutong (poutianak), gutta percha, balata and gutta siak, on hand and in transit, as of September 30, 1918; the answered questionnaire to be returned immediately to Irving B. Ferguson, C. P. A., 511 Fifth avenue, New York City.

W. S. C. QUESTIONNAIRE NO. 18.

At the request of the War Industries Board, this questionnaire was sent to manufacturers September 23, for information respecting the quantity of crude rubber, dry weight (not including balata, guayule, gutta percha, gutta siak and jelutong), used in the production of specified classes in said class during July, August and September, 1918; the answered questionnaire to be returned by October 10 to Irving B. Ferguson, C. P. A., 511 Fifth avenue, New York City.

Crude Rubber Allocation for the Next Quarter.

ON September 23, manufacturers and importers were informed by the Committee on Rubber and Kindred Products that the War Trade Board had adopted the following allocation program for October, November and December:

The quantity of rubber for which import licenses may be issued by the War Trade Board during the forthcoming October-December period has been fixed at 25,000 tons, and will be allocated in accordance with the following program to manufacturers who have furnished the information called for in Questionnaires 2, 14, 16 and 17, and who conformed to the plan of curtailment of production during the months of August and September announced by the War Trade Board, and who subscribed to the limitations and regulations governing the production and sale of rubber products as promulgated, or as may be hereafter promulgated, by the War Industries Board.

For the purpose of allocation, the consumption of crude rubber will be considered under three classes, as follows:

CLASS A. That used in the manufacture of products invoiced during October-December, 1918, on direct government orders. (Direct government orders are to include direct orders from all railroad, express, telephone and telegraph companies under Government contract, direct Red Cross and direct Allied Government orders.)

CLASS B. That used in the manufacture of automobile castings and tubes under six inches in diameter.

CLASS C. That used in the manufacture of all other rubber products.

Rubber will be allocated in the three classes upon the following basis:

CLASS A. Rubber consumed in this class will be replaced in full, if reported in the usual manner. Manufacturers will have the privilege of making advance applications for an amount not to exceed 75 per cent of the amount to which they will be entitled. The remainder is to be replaced when the exact amount has been determined.

CLASS B. (1) To manufacturers whose plants were in operation previous to January 1, 1917, on the basis of 1/18 of their 18 months' rubber consumption in said class from January, 1917, to June, 1918, inclusive, after deducting from said consumption all rubber consumed in direct government orders falling within said class, invoiced January-June, 1918, inclusive.

(2) To manufacturers whose plants were not in operation previous to January 1, 1917, but were previous to January 1, 1918, on the basis of 1/6 of their rubber consumption in said class from January, 1918, to June, 1918, inclusive, after deducting from said consumption all rubber consumed in direct government orders falling within said class, invoiced during January-June, 1918, inclusive.

(3) To manufacturers whose plants were not in operation previous to January 1, 1918, but were previous to July 1, 1918, a quantity equal to their average monthly rubber consumption in said class during the period of operation to August 1, 1918, after deducting rubber consumed in direct government orders falling within the said class, invoiced during said period.

CLASS C. Manufacturers will be allocated a quantity equal to 3/4 of their consumption of rubber in said class during April, May and June, 1918, after deducting rubber consumed in direct government orders falling within said class, invoiced during April, May and June, inclusive.

The amount allocated to each manufacturer will be entered in the books of the Bureau of Imports of the War Trade Board, which amount can be checked against by the manufacturers in the form of allocation certificates, which will be furnished by the Bureau of Imports.

These allocation certificates will be issued to each manufacturer in two forms. Twenty-five per cent of the allocation will be limited to rubber from Central and South America. Seventy-five per cent of the allocation will be for rubber from any source. Manufacturers must utilize the full amount of their allocation before any allocation will be made them in succeeding periods.

FEATURES OF THE NEW PLAN.

The Committee on Rubber and Kindred Products states that this plan of allocation differs from the preceding ones in certain respects, amongst them as follows:

(1) Variable percentages are allotted against the three classes of A, B and C and the basis of allocation is predicated on different periods in lieu of 1917 consumption as heretofore employed.

(2) Rubber used in filling indirect government orders will not be replaced. We are informed that so much difficulty has been experienced in tracing same to a government order that the plan is not workable. We are also advised that nearly all government orders for rubber goods consuming substantial quantities of rubber will be placed direct by the Government from now on, and this along with the increased allocation in Class C, which class represents the characters of goods largely used in indirect business, should simplify this problem.

(3) All figures of consumption upon which the allocation is predicated will be the amount of rubber used in other than government business. Rubber used in direct government orders heretofore has been fully replaced as it will be during the forthcoming period.

To such manufacturers who were not in receipt of an allocation covering the August-September period, we are informed by the War Trade Board that if they are entitled to one for the forthcoming quarter that they will receive in addition thereto a proportionately greater amount to cover the aforesaid two months.

RULES GOVERNING PRODUCTION AND SALE OF RUBBER PRODUCTS.

The War Service Committee notified all manufacturers on September 23 as follows:

We are instructed by the War Industries Board to advise that the following limitations and regulations governing production and sale of rubber products will be in effect for the period of October-November-December, 1918:

1. Manufacturers may produce during the period all classes of rubber products (except automobile casings and tubes under six inches) considered essential and for essential use, in accordance with rules and regulations that may be issued from time to time by order of the Priorities and Conservation Divisions of the War Industries Board, in quantity measured by rubber consumed equal to but not in excess of 100 per cent of their April-May-June (1918) rubber consumption in all products (except automobile casings and tubes under six inches) not including said consumption rubber consumed in all products invoiced during said period on direct Government orders.

This limitation of 100 per cent in production does not apply to government business or essential medical or surgical goods which may be produced to meet requirements.

2. Tire manufacturers whose plants were in operation previous to January 1, 1917, may produce during the period, exclusive of direct government orders, up to but not in excess of 1/12 of the automobile casings and tubes under six inches manufactured by them during the period from January, 1917, to June, 1918, inclusive (not including in said production automobile casings and tubes under six inches invoiced on direct government orders during the period January, 1918, to June, 1918), measured by rubber consumed and by number produced.

3. Tire manufacturers whose plants were not in operation previous to January 1, 1917, but were in operation previous to January 1, 1918, may produce during the period, exclusive of direct government orders, up to but not in excess of 1/4 of the automobile casings and tubes under six inches manufactured by them during the period January to June, 1918 (not including in said production automobile casings and tubes under six inches invoiced

on direct government orders during the period January to June, 1918), measured by rubber consumed and by number produced.

4. Tire manufacturers whose plants were not in operation previous to January 1, 1918, but were in operation previous to July 1, 1918, may produce each month during the period, exclusive of direct government orders, a quantity equal to but not in excess of 50 per cent of their average monthly production of automobile casings and tubes under six inches manufactured by them for the period of operation to August 1, 1918, measured by rubber consumed and by number produced.

5. Manufacturers producing more than one class of rubber products will be privileged to increase their consumption of rubber in any of the several classes of products listed as essential (except automobile casings and tubes under six inches) provided they make a corresponding decrease in the consumption of rubber in other classes so that their total consumption shall not be greater than herein provided for.

6. Manufacturers having raw materials on hand, and who are unable to operate their plants on basis of restricted output herein or hereafter provided will be allowed a greater production to avoid so far as possible manufacturing loss in the liquidation of their inventories. All such cases should be reported direct to the Rubber Section of the War Industries Board, accompanied by a sworn statement of the quantity of rubber (specifying gross or net weight), of fabric in pounds (specifying types), and of other principal materials on hand. Tire manufacturers should state the minimum schedule of casings and tubes on which their plants can be operated without manufacturing loss.

AN IMPORTANT LETTER TO TIRE DEALERS.

The War Service Committee, in the following letter dated September 23, requests the hearty cooperation of all tire dealers:

This committee has frequently had brought to its attention newspaper and trade paper reports and other rumors, erroneous either in whole or in part, as to the attitude of the Federal Government as expressed by the War Industries Board in connection with the manufacture, distribution and purchase by users of pneumatic automobile tires.

In connection with the National War Program, the Government desires to help and induce all to save unnecessary investments in materials, unnecessary expenditures of money, and unnecessary employment of man power.

In connection with our National Shipping Program, they also desire to save shipping space.

Such limitations as have been made in the importation of supplies of crude rubber have been made after a full conference with the Industry, and it is the intention of the War Industries Board to endeavor to see that the country has all that it *actually* needs without any undue hardship. Any restriction in the production of pneumatic tires is made after a review of the conditions of stocks in the hands of manufacturers throughout the country, for the purpose of reducing unnecessary investments in tires, and you are urged to aid in this national program and to prevent, so far as lies in your power, any hoarding of tires, or any unnecessary purchase or anticipation of needs on the part of distributors, dealers or owners.

We are confident that a sufficient quantity of tires will be manufactured to take care of the cars that will be permitted to be run, and the Government will look with stern disfavor on any profiteering or hoarding and will act accordingly.

Your patriotic and hearty cooperation is solicited.

AMERICAN SOLDIERS THANKFUL FOR CONTRIBUTIONS TO SMOKE FUND.

Twenty postal cards have been received from American soldiers over there, expressing their appreciation of the tobacco obtained through the contributions of the Rubber Association of America, Inc., to the Smoke Fund.

SALES OF CIVILIAN RUBBER CLOTHING TO BE MINIMIZED.

In view of the constantly increasing demands for war goods, the United States Rubber Co. has requested its branch managers to keep sales of rubber clothing for civilian purposes at the minimum.

RUBBER AND BALATA EXPORTS FROM PANAMA.

During 1917, the exports of balata from Panama amounted to 563,198 kilos, value \$513,263, while the quantity of rubber shipped totaled 51,379 kilos, value \$60,576.

THE ECONOMIC VALUES OF CRUDE RUBBER IMPORTS.

ACCORDING to information obtained by the Committee on Rubber and Kindred Products, crude rubber has advantages in gross import values, cubical storage, dollar values and dead weights, as compared with other import commodities.

The total tonnage of crude rubber shipped by the Pacific route is shown in the following tabulation:

From:	CALENDAR YEAR 1917.	JANUARY, 1918.
British East Indies	195,335,015	15,299,675
Dutch East Indies	59,689,895	6,316,601
Totals	255,024,910	21,616,276
Totals	113,846	9650

The value of these imports in United States dollars is shown below:

From:	CALENDAR YEAR 1917.	JANUARY, 1918.
British East Indies	\$113,480,370	\$8,216,439
Dutch East Indies	\$6,671,226	\$3,397,685
Totals	\$120,151,596	\$11,614,094

The relative percentage of rubber tonnage on the Pacific to the total tonnage is obtained by the following calculations:

Crude rubber, on the average, will store about 30 pounds to the cubic foot. Reducing the tonnage of rubber imports at Pacific ports to units of 100 cubic feet by dividing the total pounds by 3,000, the following cargo space units are obtained:

	CALENDAR YEAR 1917.	JANUARY, 1918.
Rubber cargo tons	40,000	7,905
Total Pacific tonnage	1,332,140	209,948
Per cent of rubber tonnage to total tonnage	3.0	2.8

The values in United States dollars of Pacific Coast imports follow:

	CALENDAR YEAR 1917.	JANUARY, 1918.
Total imports	\$539,335,640	\$51,663,273
Rubber imports	\$120,151,596	\$11,614,094
Per cent of rubber imports to total imports	22.3	22.5

Therefore, in 1917 rubber occupied only 3.6 per cent of the total tonnage, but represented in value 28 per cent of the total imports on the Pacific coast. For the month of January, 1918, the corresponding percentages were 2.8 and 22½.

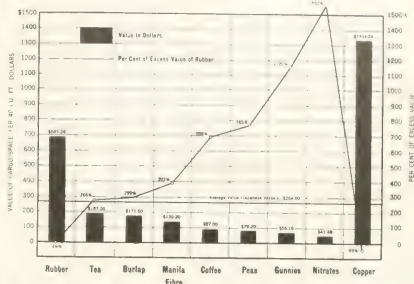
The money value of crude rubber in a unit of cargo space as compared with other commodities, shows an advantage in favor of rubber. For this purpose nine out of twenty-nine of the principal commodities imported in January and February, 1918, representing 198,835 long tons, value \$96,155,357, were taken for comparison. The nine products, including rubber, totaled 76,448 tons, value \$47,901,094, nearly 50 per cent of the 29 commodities in both tons and values.

The following table gives the merchandise values of these commodities to one cargo space unit of 40 cubic feet:

Commodity	VALUE IN DOLLARS IN 40 CUBIC FEET	EXCESS VALUE OF RUBBER	PER CENT EXCESS VALUE OF RUBBER
Rubber	\$685.50	---	---
Tea	187.30	\$498.00	72%
Burial	171.60	\$513.90	75%
Manila	139.20	\$546.30	79%
Coffee	87.00	\$598.50	68%
Peas	79.20	\$606.30	76%
Guinnies	56.16	\$629.34	112%
Nitrates	41.48	\$643.7	155%
Copper	1,331.24	649.04	48%

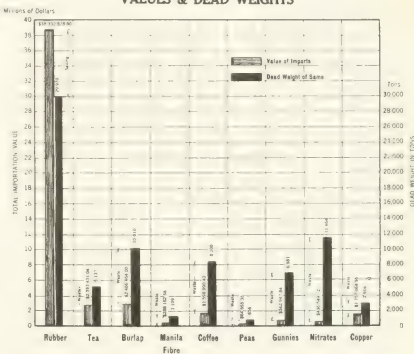
The advantage in favor of rubber is shown in the following graphs that illustrate the relative cubical contents, the dollar values and dead weights for the nine commodities.

CARGO SPACE VALUES



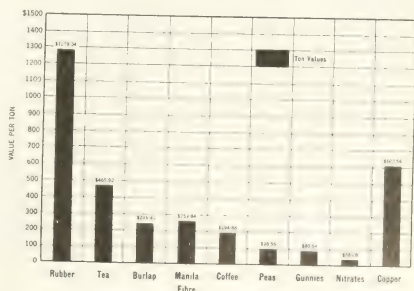
ILLUSTRATING THE RESPECTIVE VALUES PER 40 CUBIC FEET AND THE PERCENTS OF EXCESS VALUE OF RUBBER OVER THE OTHER COMMODITIES.

VALUES & DEAD WEIGHTS



ILLUSTRATING THE FACT THAT THE DOLLAR VALUE OF RUBBER EXCEEDS THE WEIGHT WHILE IN ALL OTHER CASES THE WEIGHT EXCEEDS THE DOLLAR VALUE.

TON VALUES



ILLUSTRATING THE DIFFERENCE IN TON VALUES.

more than one non-skid tread design, selection of the design to be adopted is at the option of the Motor Transport Service. A small section of the tire shall be submitted for approval before contract is let.²

(c) The tires shall be plainly marked with manufacturer's name, serial number and size of the tire, and marked with either tag or label in colors of red, white or blue, which will denote as follows: red, first four months of calendar year; white, second four months of calendar year; blue, last four months of calendar year. The marking shall be in the form of a triangle and round labels or tags—tags or labels to be approximately two inches in diameter.

(d) As soon as possible it is desired that all tires be marked with the equivalent millimeter sizes as recommended by the Society of Automotive Engineers.

(e) TYPE. All tires manufactured in accordance with this specification, shall be of the clincher type, designed for the standard S. A. E. clincher motorcycle CC rim of the size 28 by 3.

(f) CONSTRUCTION. (a) Splices on first ply fabric shall be gum stripped. (b) Carcass of tire shall consist of at least four separate plies of tire duck with friction coat on two sides and skim coat on one side applied on a 45-degree bias. The gage of one ply frictioned on two sides and skim coated on one side shall be not less than 1/16 inch. Each ply shall be marked with two splices which must be at least 7 inches apart measured on the circumference of the tire. The splices in the tire shall be at least 3 inches apart when measured on the circumference of the tire.

(c) All fabric must be square woven (23 by 23) from the best quality long-staple cotton, weighing 17½ ounces to the square yard with an allowable variance of plus or minus 3 per cent.

(d) All fabric must be thoroughly dried according to standard manufacturing practice before it is started through the operations of rubberizing.

(e) The usual method of inspection used by tire companies in commercial practice to discover defects in each roll of fabric shall be employed. The following tests shall be used to determine the strength of the fabric. All fabric shall be tested in a standard testing machine to determine the tensile strength. The distance between the grips on the machine shall be approximately 3 inches and the separation of the jaws shall be at the rate of 20 inches per minute. Six samples shall be cut from each roll in such a manner as to be representative of the whole roll. Each sample shall be cut longitudinally to determine the warp strength and three samples shall be cut transversely to determine the filler strength (unravel to 23 yards (1-inch width), heat and dry immediately and immediately test it in machine. The results must show a tensile strength of not less than 165 pounds per inch width for either warp or filler.

(f) Breaks shall be constructed with a rubber core filler as in standard commercial practice.

(g) One chafing strip of square woven fabric weighing not less than 8 ounces per square yard to be used. The chafing strip shall extend up and down the tire at least 3/16 inch from the channel of the bead. (h) There shall be a cushion of rubber compound applied over the fabric which shall be wider than the breaker. The minimum gage of this cushion shall be .050 inch.

(i) Over the cushion there shall be a single breaker strip of open-weave fabric, such as is used in standard commercial practice, coated on both sides with a uniform thickness of rubber compound. The breaker strip shall be of a nature to form a perfect union between the cushion and tread when the cure is effected. This breaker strip shall have a minimum width of 2 inches.

(j) Breaker shall be made from long staple cotton weighing not less than eight ounces per square yard.

(k) The tread of the tire shall not be less than 5/16 inch thick in the center, 3/16 inch of which shall be the minimum thickness for the part of the tread under the middle of the non-skid portion.

(l) The sidewall of the tire shall have a minimum thickness of .050 inch.

4. PHYSICAL MEASUREMENTS AND TESTS. (a) Cross sectional diameter of each tire, including the cushion, shall be within 1/16 inch of the recommended size of the S. A. E. shall not be less than 3.4 nor more than 3.6 inches.

(b) Tire shall be capable of withstanding water pressure of 275 pounds per square inch without apparent injury. This test to be made at the discretion of the inspector.

(c) The strength of the union between the plies of fabric shall average 16 pounds or more per inch using the standard friction test.

(d) The strength of the union between the breaker and tread and between the breaker and cushion shall average 25 pounds or more per inch using the standard friction test.

(e) The strength of the union between the cushion and plies shall average 16 pounds or more per inch using the standard friction test.

(f) The strength of the union between the sidewall and plies shall average 12 pounds or more per inch using the standard friction test.

5. ROAD TEST. (a) Any manufacturer, bidding on orders for government business, must be prepared to meet the following testing conditions: (1) To be able to reproduce a tire of the same kind and quality as the tire the company submitting the bid tenders an affidavit stating that they maintain and properly check up tests on cars to properly test their pneumatic tires, and that these cars deliver an average of 2,000 tire miles weekly.

(2) The cars, speeds, loads and road conditions must be such that the tires are properly tested and the government may appoint an inspector to see that the above conditions are complied with.

(3) A successful bidder must supply an affidavit before delivering any tires to the government stating that the tires are of the same kind and quality as the tires the company submitting the bid tenders an affidavit stating that they maintain and properly check up tests on cars to properly test their pneumatic tires, and that these cars deliver an average of 2,000 tire miles weekly.

(4) The cars, speeds, loads and road conditions must be such that the tires are properly tested and the government may appoint an inspector to see that the above conditions are complied with.

(5) A successful bidder must supply an affidavit before delivering any tires to the government stating that the tires are of the same kind and quality as the tires the company submitting the bid tenders an affidavit stating that they maintain and properly check up tests on cars to properly test their pneumatic tires, and that these cars deliver an average of 2,000 tire miles weekly.

(6) The cars, speeds, loads and road conditions must be such that the tires are properly tested and the government may appoint an inspector to see that the above conditions are complied with.

6. LINING. The inside of each tire shall be properly lined in accordance with the standard practice of tire manufacturers.

(a) The casing of each tire shall be lined in accordance with the inside of the casing in accordance with the standard commercial practice.

(b) COMPOUND. (a) Tread—The tread shall be made from and have the characteristics of a compound made from the best quality new wild or plantation rubber. Content of sulphur shall not exceed 8 per cent weight of new rubber used. Compound shall be free from ingredients known to be deleterious to the health of man or animals.

(b) Sidewalls—The sidewalls shall be made from and have the characteristics of a compound containing a minimum of 65 per cent by volume of the best quality new wild or plantation rubber. Sulphur content shall not exceed 8 per cent by weight. The tread and sidewall shall be retained rubber to the extent of 15 per cent of the total compound is allowable, but the amount and kind must be declared by the manufacturer. The minimum

tensile strength of the sidewall rubber shall be 1,500 pounds per square inch with a minimum elongation of 450 (2 to 11 inches) and a minimum set of 25 per cent as done in tread test. Compound shall be free from ingredients known to the rubber trade as "oil substitutes."

(c) The total sulphur in any of the above compounds shall not exceed 8 per cent of the weight of new rubber used except as follows: if the manufacturer desires to use sulphur bearing mineral fillers, thereby causing the total sulphur to be 8 per cent of the weight of the new rubber, he may do so, but shall submit for analysis a sample of the finished article made. Such stock shall not show a sulphur content in the acetone extraction test of the weight of new rubber used.

9. INSPECTION. The Motor Transport Service reserves the right to make any inspection or test or analysis necessary to insure the product meeting all requirements of this specification.

(a) The total sulphur in any of the above compounds shall not exceed 8 per cent of the weight of new rubber used except as follows: if the manufacturer desires to use sulphur bearing mineral fillers, thereby causing the total sulphur to be 8 per cent of the weight of the new rubber, he may do so, but shall submit for analysis a sample of the finished article made. Such stock shall not show a sulphur content in the acetone extraction test of the weight of new rubber used.

(b) The total sulphur in any of the above compounds shall not exceed 8 per cent of the weight of new rubber used except as follows: if the manufacturer desires to use sulphur bearing mineral fillers, thereby causing the total sulphur to be 8 per cent of the weight of the new rubber, he may do so, but shall submit for analysis a sample of the finished article made. Such stock shall not show a sulphur content in the acetone extraction test of the weight of new rubber used.

(c) The total sulphur in any of the above compounds shall not exceed 8 per cent of the weight of new rubber used except as follows: if the manufacturer desires to use sulphur bearing mineral fillers, thereby causing the total sulphur to be 8 per cent of the weight of the new rubber, he may do so, but shall submit for analysis a sample of the finished article made. Such stock shall not show a sulphur content in the acetone extraction test of the weight of new rubber used.

(d) The total sulphur in any of the above compounds shall not exceed 8 per cent of the weight of new rubber used except as follows: if the manufacturer desires to use sulphur bearing mineral fillers, thereby causing the total sulphur to be 8 per cent of the weight of the new rubber, he may do so, but shall submit for analysis a sample of the finished article made. Such stock shall not show a sulphur content in the acetone extraction test of the weight of new rubber used.

(e) The total sulphur in any of the above compounds shall not exceed 8 per cent of the weight of new rubber used except as follows: if the manufacturer desires to use sulphur bearing mineral fillers, thereby causing the total sulphur to be 8 per cent of the weight of the new rubber, he may do so, but shall submit for analysis a sample of the finished article made. Such stock shall not show a sulphur content in the acetone extraction test of the weight of new rubber used.

(f) The total sulphur in any of the above compounds shall not exceed 8 per cent of the weight of new rubber used except as follows: if the manufacturer desires to use sulphur bearing mineral fillers, thereby causing the total sulphur to be 8 per cent of the weight of the new rubber, he may do so, but shall submit for analysis a sample of the finished article made. Such stock shall not show a sulphur content in the acetone extraction test of the weight of new rubber used.

(g) The total sulphur in any of the above compounds shall not exceed 8 per cent of the weight of new rubber used except as follows: if the manufacturer desires to use sulphur bearing mineral fillers, thereby causing the total sulphur to be 8 per cent of the weight of the new rubber, he may do so, but shall submit for analysis a sample of the finished article made. Such stock shall not show a sulphur content in the acetone extraction test of the weight of new rubber used.

(h) The total sulphur in any of the above compounds shall not exceed 8 per cent of the weight of new rubber used except as follows: if the manufacturer desires to use sulphur bearing mineral fillers, thereby causing the total sulphur to be 8 per cent of the weight of the new rubber, he may do so, but shall submit for analysis a sample of the finished article made. Such stock shall not show a sulphur content in the acetone extraction test of the weight of new rubber used.

(i) The total sulphur in any of the above compounds shall not exceed 8 per cent of the weight of new rubber used except as follows: if the manufacturer desires to use sulphur bearing mineral fillers, thereby causing the total sulphur to be 8 per cent of the weight of the new rubber, he may do so, but shall submit for analysis a sample of the finished article made. Such stock shall not show a sulphur content in the acetone extraction test of the weight of new rubber used.

(j) The total sulphur in any of the above compounds shall not exceed 8 per cent of the weight of new rubber used except as follows: if the manufacturer desires to use sulphur bearing mineral fillers, thereby causing the total sulphur to be 8 per cent of the weight of the new rubber, he may do so, but shall submit for analysis a sample of the finished article made. Such stock shall not show a sulphur content in the acetone extraction test of the weight of new rubber used.

(k) The total sulphur in any of the above compounds shall not exceed 8 per cent of the weight of new rubber used except as follows: if the manufacturer desires to use sulphur bearing mineral fillers, thereby causing the total sulphur to be 8 per cent of the weight of the new rubber, he may do so, but shall submit for analysis a sample of the finished article made. Such stock shall not show a sulphur content in the acetone extraction test of the weight of new rubber used.

(l) The total sulphur in any of the above compounds shall not exceed 8 per cent of the weight of new rubber used except as follows: if the manufacturer desires to use sulphur bearing mineral fillers, thereby causing the total sulphur to be 8 per cent of the weight of the new rubber, he may do so, but shall submit for analysis a sample of the finished article made. Such stock shall not show a sulphur content in the acetone extraction test of the weight of new rubber used.

(m) The total sulphur in any of the above compounds shall not exceed 8 per cent of the weight of new rubber used except as follows: if the manufacturer desires to use sulphur bearing mineral fillers, thereby causing the total sulphur to be 8 per cent of the weight of the new rubber, he may do so, but shall submit for analysis a sample of the finished article made. Such stock shall not show a sulphur content in the acetone extraction test of the weight of new rubber used.

(n) The total sulphur in any of the above compounds shall not exceed 8 per cent of the weight of new rubber used except as follows: if the manufacturer desires to use sulphur bearing mineral fillers, thereby causing the total sulphur to be 8 per cent of the weight of the new rubber, he may do so, but shall submit for analysis a sample of the finished article made. Such stock shall not show a sulphur content in the acetone extraction test of the weight of new rubber used.

(o) The total sulphur in any of the above compounds shall not exceed 8 per cent of the weight of new rubber used except as follows: if the manufacturer desires to use sulphur bearing mineral fillers, thereby causing the total sulphur to be 8 per cent of the weight of the new rubber, he may do so, but shall submit for analysis a sample of the finished article made. Such stock shall not show a sulphur content in the acetone extraction test of the weight of new rubber used.

(p) The total sulphur in any of the above compounds shall not exceed 8 per cent of the weight of new rubber used except as follows: if the manufacturer desires to use sulphur bearing mineral fillers, thereby causing the total sulphur to be 8 per cent of the weight of the new rubber, he may do so, but shall submit for analysis a sample of the finished article made. Such stock shall not show a sulphur content in the acetone extraction test of the weight of new rubber used.

(q) The total sulphur in any of the above compounds shall not exceed 8 per cent of the weight of new rubber used except as follows: if the manufacturer desires to use sulphur bearing mineral fillers, thereby causing the total sulphur to be 8 per cent of the weight of the new rubber, he may do so, but shall submit for analysis a sample of the finished article made. Such stock shall not show a sulphur content in the acetone extraction test of the weight of new rubber used.

(r) The total sulphur in any of the above compounds shall not exceed 8 per cent of the weight of new rubber used except as follows: if the manufacturer desires to use sulphur bearing mineral fillers, thereby causing the total sulphur to be 8 per cent of the weight of the new rubber, he may do so, but shall submit for analysis a sample of the finished article made. Such stock shall not show a sulphur content in the acetone extraction test of the weight of new rubber used.

(s) The total sulphur in any of the above compounds shall not exceed 8 per cent of the weight of new rubber used except as follows: if the manufacturer desires to use sulphur bearing mineral fillers, thereby causing the total sulphur to be 8 per cent of the weight of the new rubber, he may do so, but shall submit for analysis a sample of the finished article made. Such stock shall not show a sulphur content in the acetone extraction test of the weight of new rubber used.

(t) The total sulphur in any of the above compounds shall not exceed 8 per cent of the weight of new rubber used except as follows: if the manufacturer desires to use sulphur bearing mineral fillers, thereby causing the total sulphur to be 8 per cent of the weight of the new rubber, he may do so, but shall submit for analysis a sample of the finished article made. Such stock shall not show a sulphur content in the acetone extraction test of the weight of new rubber used.

(u) The total sulphur in any of the above compounds shall not exceed 8 per cent of the weight of new rubber used except as follows: if the manufacturer desires to use sulphur bearing mineral fillers, thereby causing the total sulphur to be 8 per cent of the weight of the new rubber, he may do so, but shall submit for analysis a sample of the finished article made. Such stock shall not show a sulphur content in the acetone extraction test of the weight of new rubber used.

(v) The total sulphur in any of the above compounds shall not exceed 8 per cent of the weight of new rubber used except as follows: if the manufacturer desires to use sulphur bearing mineral fillers, thereby causing the total sulphur to be 8 per cent of the weight of the new rubber, he may do so, but shall submit for analysis a sample of the finished article made. Such stock shall not show a sulphur content in the acetone extraction test of the weight of new rubber used.

(w) The total sulphur in any of the above compounds shall not exceed 8 per cent of the weight of new rubber used except as follows: if the manufacturer desires to use sulphur bearing mineral fillers, thereby causing the total sulphur to be 8 per cent of the weight of the new rubber, he may do so, but shall submit for analysis a sample of the finished article made. Such stock shall not show a sulphur content in the acetone extraction test of the weight of new rubber used.

(x) The total sulphur in any of the above compounds shall not exceed 8 per cent of the weight of new rubber used except as follows: if the manufacturer desires to use sulphur bearing mineral fillers, thereby causing the total sulphur to be 8 per cent of the weight of the new rubber, he may do so, but shall submit for analysis a sample of the finished article made. Such stock shall not show a sulphur content in the acetone extraction test of the weight of new rubber used.

(y) The total sulphur in any of the above compounds shall not exceed 8 per cent of the weight of new rubber used except as follows: if the manufacturer desires to use sulphur bearing mineral fillers, thereby causing the total sulphur to be 8 per cent of the weight of the new rubber, he may do so, but shall submit for analysis a sample of the finished article made. Such stock shall not show a sulphur content in the acetone extraction test of the weight of new rubber used.

(z) The total sulphur in any of the above compounds shall not exceed 8 per cent of the weight of new rubber used except as follows: if the manufacturer desires to use sulphur bearing mineral fillers, thereby causing the total sulphur to be 8 per cent of the weight of the new rubber, he may do so, but shall submit for analysis a sample of the finished article made. Such stock shall not show a sulphur content in the acetone extraction test of the weight of new rubber used.

(aa) The total sulphur in any of the above compounds shall not exceed 8 per cent of the weight of new rubber used except as follows: if the manufacturer desires to use sulphur bearing mineral fillers, thereby causing the total sulphur to be 8 per cent of the weight of the new rubber, he may do so, but shall submit for analysis a sample of the finished article made. Such stock shall not show a sulphur content in the acetone extraction test of the weight of new rubber used.

(ab) The total sulphur in any of the above compounds shall not exceed 8 per cent of the weight of new rubber used except as follows: if the manufacturer desires to use sulphur bearing mineral fillers, thereby causing the total sulphur to be 8 per cent of the weight of the new rubber, he may do so, but shall submit for analysis a sample of the finished article made. Such stock shall not show a sulphur content in the acetone extraction test of the weight of new rubber used.

(ac) The total sulphur in any of the above compounds shall not exceed 8 per cent of the weight of new rubber used except as follows: if the manufacturer desires to use sulphur bearing mineral fillers, thereby causing the total sulphur to be 8 per cent of the weight of the new rubber, he may do so, but shall submit for analysis a sample of the finished article made. Such stock shall not show a sulphur content in the acetone extraction test of the weight of new rubber used.

(ad) The total sulphur in any of the above compounds shall not exceed 8 per cent of the weight of new rubber used except as follows: if the manufacturer desires to use sulphur bearing mineral fillers, thereby causing the total sulphur to be 8 per cent of the weight of the new rubber, he may do so, but shall submit for analysis a sample of the finished article made. Such stock shall not show a sulphur content in the acetone extraction test of the weight of new rubber used.

(ae) The total sulphur in any of the above compounds shall not exceed 8 per cent of the weight of new rubber used except as follows: if the manufacturer desires to use sulphur bearing mineral fillers, thereby causing the total sulphur to be 8 per cent of the weight of the new rubber, he may do so, but shall submit for analysis a sample of the finished article made. Such stock shall not show a sulphur content in the acetone extraction test of the weight of new rubber used.

(af) The total sulphur in any of the above compounds shall not exceed 8 per cent of the weight of new rubber used except as follows: if the manufacturer desires to use sulphur bearing mineral fillers, thereby causing the total sulphur to be 8 per cent of the weight of the new rubber, he may do so, but shall submit for analysis a sample of the finished article made. Such stock shall not show a sulphur content in the acetone extraction test of the weight of new rubber used.

(ag) The total sulphur in any of the above compounds shall not exceed 8 per cent of the weight of new rubber used except as follows: if the manufacturer desires to use sulphur bearing mineral fillers, thereby causing the total sulphur to be 8 per cent of the weight of the new rubber, he may do so, but shall submit for analysis a sample of the finished article made. Such stock shall not show a sulphur content in the acetone extraction test of the weight of new rubber used.

of the inspector. The test to be made at a pressure of 150 pounds per square inch, using the standard friction test.

(c) Strength of the union between cushion and ply shall average 18 pounds or more per inch, using the standard friction test.

(d) Strength of the union between sidewall and ply shall average 10 pounds or more per inch, using the standard friction test.

(e) Road Test. (a) Any manufacturer, bidding on orders for government business, must be prepared to meet the following testing conditions:

(1) No tires are to be given consideration by the Government unless the company submitting the bid tenders an affidavit stating that they maintain and properly check up tests on tires to property test their pneumatic tire products and that these cars deliver an average of 8,000 tire miles weekly.

(2) The cars, speeds, loads and road conditions must be such that the tires are properly tested and the Government may appoint an inspector to see that the above conditions are complied with.

(3) A successful bidder must supply an affidavit before delivering any tires to the Government stating that the tires to be delivered are practically duplicates in construction and material of tires which he has previously tested properly and a sufficient number of tires satisfactory to the Motor Transport Service, at least six tires, have averaged on the rear wheels at least 4,000 miles.

6. LINING. The inside of each tire shall be properly lined in accordance with the standard practice of tire manufacturer.

7. FLAPS. No flaps shall be supplied.

8. COMPOUND. (a) Tread. The tread shall be made from and have the characteristics of a compound containing at least 65 per cent by volume of the best quality of new wild or plantation rubber. Content of sulphur shall not exceed 8 per cent by weight of new rubber used. The compound shall be free from ingredients known to the rubber trade as "oil substitutes." Minimum tensile strength of tread rubber shall be 2,600 pounds per square inch and shall have a maximum of 25 per cent (400 per cent of 2 to 10 inches wide elongated for 10 minutes, using a sample with 10 minutes' rest before measuring).

(b) Friction and Cushion—These shall be made from and have the characteristics of a compound containing at least 65 per cent by volume of the best quality of new wild or plantation rubber. Sulphur content shall not be more than 8 per cent by weight of new rubber used.

(c) Sidewall. The sidewall shall be made from and have the characteristics of a compound containing a minimum of 65 per cent by volume of the best quality of new wild or plantation rubber. Sulphur content shall not be more than 8 per cent by weight of new rubber used. Reclaimed rubber to the extent of 15 per cent by weight of total compound is allowable, but the amount and kind must be declared by the manufacturer. Compound shall have a minimum tensile strength of 1,500 pounds per square inch and a minimum elongation of 450 per cent (2 to 11 inches) and a maximum set of 25 per cent. The compound shall be free from ingredients known to the rubber trade as "oil substitutes." The total sulphur in any of the compounds shall not exceed 8 per cent of the weight of new rubber used, except as follows: if the manufacturer desires to use sulphur bearing mineral fillers, then causing the compound to deliver 8 per cent of the non-sulphur rubber, he may do so, but shall submit for analysis a sample of the finished unvulcanized stock. Such stock shall not show a sulphur content in the acetone extract of over 8 per cent of the non-sulphur rubber.

9. INSPECTION. The Motor Transport Service reserves the right to make any inspection, test or analysis necessary to insure the product meeting all requirements.

10. PACKING. All tires shall be spirally wrapped according to standard practice and properly labeled on the outside showing size, type and name of manufacturer, and marked with either tag or label in colors of red, white or blue, which shall denote as follows: red, first four months of calendar year; white, second four months of calendar year; blue, last four months of calendar year; years to be designated by square triangle and round labels. Tires shipped in original equipment of cars shall be packed as specified by customer. In the case of overseas shipments, the specifications concerning this shall be applied.

SPECIFICATIONS FOR PNEUMATIC AUTOMOBILE TIRE

CASINGS, SIZE 33 BY 4.

SPECIFICATION NO. 1067.

FABRIC CONSTRUCTION.

GENERAL. (a) Pneumatic automobile tire casings manufactured in accordance with this specification shall be of fabric construction of the size known to the trade as 33 by 4.

(b) The tire shall be satisfactory service under a load of 815 pounds when inflated to 65 pounds per square inch.

(c) Tire to be free from all defects and fully guaranteed as to material and workmanship.

(d) Tires to be of the standard commercial non-skid design of the manufacturer furnishing the same. In the case of a manufacturer using more than one non-skid design, the design to be used shall be designated by the opinion of the Motor Transport Service. A small section of the tire shall be submitted for approval before marking is let.

(e) The tires shall be plainly marked with the manufacturer's name and the size of the tire, and marked with either tag or label in colors of red, white or blue, which shall denote as follows: red, first four months of calendar year; white, second four months of calendar year; blue, last four months of calendar year; years to be designated by square triangle and round labels or tags, tags or labels to be approximately 2 inches in diameter.

(f) As soon as possible it is desired that a tire be marked with the equivalent millimeter sizes as recommended by the Society of Automotive Engineers.

2. TYPE. All tires manufactured in accordance with this specification shall be of the straight sided type of the standard S. E. A. straight sided rim of the size 32 by 3½ or 33 by 4 new standard rim.

3. CONSTRUCTION. (a) Splices on the first ply of fabric shall be gum stitched.

(b) Carcass of tire shall consist of not less than five or more than six separate plies of tire duck, with friction coat on two sides and skim coat

on two sides and skim-coated on one shall be at least .045-inch. Each ply shall have not more than two splices which must be at least 7 inches apart measured on the circumference of the tire. The splices in the tire shall be at least 3 inches apart when measured on the circumference of the tire.

(c) All fabric must be square woven (23 by 23) from the best quality S. E. A. Egyptian long staple cotton. The weight of the fabric shall be 17½ ounces to the square yard, with an allowable variance of plus or minus 1 per cent.

(d) All fabric must be thoroughly dried according to standard manufacturing practice before it is started through the operations of the breaker.

(e) The usual methods of inspection used by tire companies in commercial practice to discover defects in each roll of fabric shall be employed.

(f) The following tests shall be used to determine the strength of the fabric. All fabric shall be tested in a standard testing machine to determine the tensile strength. The distance between the grips on the machine shall be approximately 3 inches and the separation of the jaws shall be at the rate of 20 inches per minute. Six samples shall be cut from each roll in such a manner as to eliminate any unnecessary waste of material. Three samples shall be cut longitudinally to determine the warp strength and three samples shall be cut transversely to determine the filler strength. The samples shall be prepared in the following manner: unravel to 23 yards (1-inch width), heat until sample is "bone dry" and immediately test it in the machine. The results must show a tensile strength of not less than 180 pounds per inch width for either warp or filler.

(g) Beads shall be constructed with wire strands in the same manner as in the standard commercial practice. Tensile strength tests for wire strands as used by the individual tire manufacturers for the construction of beads will be satisfactory in so far as they are sufficient to preclude any chance of a bead stretching or blowing off the rim when under pressure.

(h) A strip of standard commercial practice rubber, containing 8 ounces per square yard shall be used. The chafing strip shall extend upward on each side of the tire at least 1 inch from the heel of the bead.

(i) The chafing strip shall be made of a compound applied over the fabric which shall be wider than the breaker. The minimum gauge of this cushion shall be .050-inch.

(j) Over the cushion there shall be at least one breaker strip of open-weave standard commercial practice rubber, containing 30 ounces per square yard, on both sides with a rubber compound having the physical and chemical properties of a rubber to both a left and right between the cushion and tread machine. The results must show a tensile strength of not less than 100 pounds per inch width of 2½ inches.

(k) Breaker shall be made from the best quality S. E. A. Egyptian cotton, of the same physical equivalent, and shall weigh not less than 10 ounces per square yard.

(l) The tread of the tire shall not be less than ¾-inch thick at the center, ½-inch of which shall be the minimum thickness for the part of the tread between the heel of the non-skid.

(m) The sidewall of the tire shall have a minimum thickness of .050-inch.

PHYSICAL AND CHEMICAL TESTS. (a) Cross sectional diameter of each tire inflated according to the recommended weight and load schedule of the S. A. L. shall be not less than 4 inches.

(b) Tire shall be capable of withstanding water pressure of 300 pounds per square inch without apparent injury. This test to be made at the discretion of the inspector.

(c) Strength of union between plies of fabric shall average 18 pounds or more per inch, using the standard friction test.

(d) The strength of the union between breaker and tread and between breaker and cushion shall average 28 pounds or more per inch, using the standard friction test.

(e) Coupling strength between sidewall and ply shall average 10 pounds or more per inch, using the standard friction test.

(f) Strength of the union between cushion and ply shall average 16 pounds or more per inch, using the standard friction test.

ROAD TEST. (a) Any manufacturer, bidding on orders for the government business, must be prepared to meet the following testing conditions:

(1) No tires are to be given consideration by the Government unless the company submitting the bid tenders an affidavit stating that they maintain and properly check up tests on tires to property test their pneumatic tire product and that these cars deliver an average of 8,000 tire miles weekly.

(2) The cars, speeds, loads and road conditions must be such that the tires are properly tested and the Government may appoint an inspector to see that the above conditions are complied with.

(3) A successful bidder must supply an affidavit before delivering any tires to the Government stating that the tires to be delivered are practically duplicates in construction and material of tires which he has previously tested properly and a sufficient number of tires satisfactory to the Motor Transport Service, at least six tires, have averaged on the rear wheels at least 4,000 miles.

6. LINING. The inside of each tire shall be properly lined in accordance with the standard practice of tire manufacturer.

7. FLAPS. A flap of the size 33 by 4 shall be furnished with each tire, as in standard commercial practice.

8. COMPOUND. (a) Tread. The tread shall be made from and have the characteristics of a compound containing at least 65 per cent by volume of the best quality of new wild or plantation rubber. Content of sulphur shall not exceed 8 per cent by weight of new rubber used. The compound shall be free from ingredients known to the rubber trade as "oil substitutes." Minimum tensile strength of tread rubber shall be 2,600 pounds per square inch and shall have a maximum elongation of 450 per cent (2 to 10 inches wide elongated for 10 minutes, using a 2-inch sample with 10 minutes' rest before measuring).

(b) Friction and Cushion—These shall be made from and have the characteristics of a compound containing at least 65 per cent by volume of the best quality of new wild or plantation rubber. Sulphur content shall not be more than 8 per cent by weight of new rubber used. Reclaimed rubber to the extent of 15 per cent by weight of total compound is allowable, but the amount and kind must be declared by the manufacturer. Compound shall have a minimum tensile strength of 1,500 pounds per square inch and a maximum elongation of 450 per cent (2 to 11 inches) and a maximum set of 25 per cent.

(c) Sidewall—The sidewall shall be made from and have the characteristics of a compound containing a minimum of 65 per cent by volume of the best quality of new wild or plantation rubber. Sulphur content shall not be more than 8 per cent by weight of new rubber used. Reclaimed rubber to the extent of 15 per cent by weight of total compound is allowable, but the amount and kind must be declared by the manufacturer. Compound shall have a minimum tensile strength of 1,500 pounds per square inch and a maximum elongation of 450 per cent (2 to 11 inches) and a maximum set of 25 per cent.

All applications for approval must be sent to Lieutenant George B. Wells, Engineering Division, Motor Transport Corps, 358 Union Station, Washington, District of Columbia.

and a minimum elongation of 450 per cent (2 to 11 inches) and a maximum set of 25 per cent. The compound shall be free from skid marks in water to the rubber trade as "oil substitutes".

The total sulphur in any of the above compounds shall not exceed 8 per cent of the weight of new rubber, except as follows: if the manufacturer desires to use sulphur-bearing mineral fillers, the total sulphur shall be over 8 per cent of the weight of new rubber, he may use up to 50, but shall not exceed 100, parts of the finished uncured vulcanized stock. Such stock shall not show a sulphur content in the acetone extract of over 8 per cent of the weight of new rubber used.

INSPECTION. The Motor Transport Service reserves the right to make any inspection, test or analysis necessary to insure the product meeting all requirements of this specification.

10. PACKING. All tires shall be spirally wrapped according to standard practice and properly labeled on the outside showing size, type and name of manufacturer, marked with either tag or label in colors of red, white or blue, which will denote as follows: red, first four months of calendar year; white, second four months of calendar year; blue, last four months of calendar year; years to be designated by square, triangle and round labels or tags, tags or labels to be approximately 2 inches in diameter. Tires shipped for original equipment of cars shall be packed as specified by customer. In the case of overseas shipments, the specifications covering this shall be applied. The compound shall be free from ingredients known to the rubber trade as "oil substitutes".

SPECIFICATIONS FOR PNEUMATIC AUTOMOBILE TIRE CASINGS, SIZE 33 BY 4. **SPECIFICATION NO. 1068.** **CORD CONSTRUCTION.**

1. GENERAL. (a) Pneumatic automobile tire casings manufactured in accordance with this specification shall be of cord construction of the size known to the trade as 33 by 4 1/2 inches.

(b) The tire must exhibit satisfactory service under a load of 815 pounds when inflated to 65 pounds per square inch.

(c) Tires to be free from all defects and fully guaranteed as to material and workmanship.

(d) Tires shall be of the standard commercial non-skid design of the manufacturer furnishing the same, or of rib tread design as specified on the order. In the case of a manufacturer using more than one non-skid tread design, selection of the design to be adopted is at the option of the Motor Transport Service. A small section of the tire shall be submitted for approval before production.

(e) All tires shall be branded with the manufacturer's name, size of tire, serial number and marked with either tag or label in colors of red, white or blue, which will denote as follows: red, first four months of calendar year; white, second four months of calendar year; blue, last four months of calendar year. Years to be designated by square, triangle and round labels or tags. Tags or labels to be approximately 2 inches in diameter.

(f) As soon as possible, it is desired that all tires be marked with the equivalent millimeter sizes as recommended by the Society of Automotive Engineers.

2. TYPE. All tires manufactured in accordance with this specification shall be of the straight side type, designed for the standard S. A. E. straight side rim of the size 32 by 4 1/2 inches.

3. CONSTRUCTION. (a) Carcass of tire shall consist of no less than four and no more than eight separate plies of cord applied in such a manner that an equal number of plies shall run in each diagonal direction across the tire.

(b) All cord material to be of the best quality combed Sea Island or Egyptian cotton, or its physical equivalent.

(c) All cord fabric must be thoroughly dried according to standard manufacturing practice before it is started through the operations of rubberizing.

(d) The usual methods of inspection used by tire manufacturers to commercial practice to discover defects in each roll of cord fabric shall be employed, and tests to determine the tensile strength of cords shall be made on ten individual cords taken from each roll. These tests shall be made in the following manner:

(1) The individual cords shall be tested in a fabric testing machine in which the distance between grips is approximately 10 inches, which grips separate at the rate of 20 inches per minute. The results shown must be up to the standard specification of the individual manufacturer.

(2) Heads of cords to be constructed in the same manner as in standard commercial practice. Tensile strength tests for wire strands as used by the individual tire manufacturers in the construction of beads shall be satisfactory so far as they are concerned, but any change of a bead stretching or blowing off the rim when under pressure.

(3) Two chafing strips of fabric weighing not less than 8 ounces per square yard shall be used. Each chafing strip must extend over the entire width of the tire, least 1 inch from the edge of the bead. One chafing strip shall extend at least 3/16-inch above the other.

(4) There shall be a cushion of rubber compound applied over the cords which shall be wider than the breaker. The minimum gage of this cushion shall be .050-inch.

(5) Over the cushion there shall be at least one breaker strip of open-weave fabric canvas or its standard commercial practice, coated on both sides with a rubber compound having the physical and chemical properties of a nature to form a perfect union between the cushion and tread and the cure effect. The breaker strip shall have a minimum width of 3 inches.

(6) Breaker shall be made from the best quality of Sea Island or Egyptian cotton, or its physical equivalent, and shall weigh not less than 10 ounces per square yard.

(7) The tread of the tire shall not be less than 3/16-inch thick, in the center, 1/2-inch thick at the edges, and 1/4-inch thick for the part of the tread under the middle of the non-skid portion.

(8) The sidewall of the tire shall have a minimum thickness of .0625-inch.

4. PHYSICAL MEASUREMENTS AND TESTS. (a) Cross-sectional weight of each tire inflated according to the recommended weight and load schedule of the S. A. E. shall be 14.5 pounds.

(b) Tire shall be capable of withstanding water pressure of 35 pounds per square inch without apparent injury. This test to be made at the discretion of the inspector.

(c) The minimum strength of the tire shall be 2,000 pounds. This "strength factor" is the product of the number of cords per inch measured at the tread at right angles to the cords times strength of individual cord of the tire.

(d) All sections for approval must be sent to Lieutenant George B. Wells, Engineering Division, Motor Transport Center, 558 Union Station, Washington, District of Columbia.

taken from the cord tire, times the number of plies.

(d) The strength of the union between breaker and cushion and between breaker and cushion shall be at least 100 pounds per inch, with the standard friction test.

(e) Strength of the union between sidewall and plies shall average 14 pounds per inch, using the standard friction test.

(f) Strength of the union between cushion and plies shall average 16 pounds or more per inch, using the standard friction test.

5. ROAD TEST. (a) Any manufacturer, bidding on orders for government tires, must be prepared to meet the following testing conditions:

(1) No tires are to be given approval by the Government, unless the company submitting the bid tenders an affidavit stating that they are certain and properly checked on test cars or properly test their pneumatic wheels, and that these cars, devices or wheels are of the best quality.

(2) The cars, speeds, loads and road conditions must be such that the tires are properly tested and the Government may appoint an inspector to see that the conditions are complied with.

(3) A successful bidder must supply an affidavit before delivering any tires to the Government, stating that the tires to be delivered are practically duplicates in construction and material of tires which he has previously tested properly, and sufficient number of tires satisfactory to the Motor Transport Service, at least six tires, have been assigned on the rear wheels at least 5,000 miles.

(4) The inside of each tire shall be properly lined in accordance with the standard practice of tire manufacturers.

(5) Flaps. A flap of the size 33 by 4 shall be furnished with each tire as in standard commercial practice.

(6) Compounds. (a) The compound to be used shall be made from and have the characteristics of a compound containing at least 70 per cent by volume of the best new rubber, content of sulphur shall not exceed 8 per cent by volume of the new rubber used. Compound shall contain no reclaimed rubber, minimum tensile strength of the finished uncured rubber shall be 1,300 pounds per square inch and shall have a minimum set of 25 per cent. Set test shall be made by stretching 2 to 10 inches and holding for 10 minutes. Rest sample for 10 minutes and then measure the per cent of elongation over the original length.

(b) Friction and Cushion—These shall be made from and have the characteristics of a compound containing at least 85 per cent by volume of the best quality new wild or plantation rubber. Sulphur content shall not be more than 8 per cent by weight of new rubber used. No reclaimed rubber can be used. Compound shall have a minimum tensile strength of 1,800 pounds per square inch and a minimum elongation of 450 per cent (2 to 1 inches) and a maximum set of 25 per cent. The compound shall be free of ingredients known to the rubber trade as "oil substitutes".

(c) Sidewall—The sidewall shall be made from and have the characteristics of a compound containing a minimum of 65 per cent by volume of the best quality new wild or plantation rubber. Sulphur content shall not be more than 8 per cent by weight of new rubber used. No reclaimed rubber can be used. Compound shall have a minimum tensile strength of 1,800 pounds per square inch and a minimum elongation of 450 per cent (2 to 1 inches) and a maximum set of 25 per cent. The compound shall be free of ingredients known to the rubber trade as "oil substitutes".

(d) The total sulphur in any of the above compounds shall not exceed 8 per cent of the weight of new rubber used except as follows: if the manufacturer desires to use sulphur-bearing mineral fillers, thereby causing the total sulphur to be over 8 per cent of the weight of new rubber, he may do so, but shall submit for analysis a sample of the finished uncured stock, which shall not show a sulphur content in the acetone extract of over 8 per cent of the weight of new rubber used.

9. INSPECTION. The Motor Transport Service reserves the right to make any inspection, test or analysis necessary to insure the product meeting all requirements of this specification.

10. PACKING. All tires shall be spirally wrapped according to standard practice and properly labeled on the outside showing size, type and name of manufacturer, marked with either tag or label in colors of red, white or blue, which will denote as follows: red, first four months of calendar year; white, second four months of calendar year; blue, last four months of calendar year; years to be designated by square, triangle and round labels or tags—tags or labels to be approximately 2 inches in diameter. Tires shipped for original equipment of cars shall be packed as specified by customer. In the case of overseas shipments, the specifications covering this shall be applied.

SPECIFICATIONS FOR PNEUMATIC AUTOMOBILE TIRE CASINGS, SIZE 35 BY 5. **SPECIFICATION NO. 1069.** **CORD CONSTRUCTION.**

1. GENERAL. (a) Pneumatic automobile tire casings manufactured in accordance to this specification shall be of cord construction, of the size known to the trade as 35 by 5 inches.

(b) The tire must exhibit satisfactory service under a load of 1,300 pounds when inflated to 75 pounds per square inch.

(c) Tires to be free from all defects and fully guaranteed as to material and workmanship.

(d) Tires shall be of the standard commercial non-skid design of the manufacturer furnishing the same, or of rib tread design as specified on the order. In the case of a manufacturer using more than one non-skid tread design, selection of the design to be adopted is at the option of the Motor Transport Service. A small section of the tire shall be submitted for approval before production.

(e) The tires shall be plainly marked with manufacturer's name, serial number and marked with either tag or label in colors of red, white or blue which will denote as follows: red, first four months of calendar year; white, second four months of calendar year; blue, last four months of calendar year. Years to be designated by square, triangle and round labels or tags—tags or labels to be approximately 2 inches in diameter.

(f) As soon as possible, it is desired that all tires be marked with the equivalent millimeter sizes as recommended by the Society of Automotive Engineers.

2. TYPE. All tires manufactured in accordance with this specification shall be of the straight side type, designed for the standard S. A. E. straight side rim of the size 34 by 4 1/2 inches.

3. CONSTRUCTION. (a) Carcass of tire shall consist of no less than four and no more than eight separate plies of cord applied in such a manner that an equal number of plies shall run in each diagonal direction across the tire.

(b) All cord material to be of the best quality combed Sea Island, or Egyptian cotton, or its physical equivalent.

(c) All cord fabric must be thoroughly dried according to standard manufacturing practice before it is started through the operations of rubberizing.

merical practice to discover defects in each roll of cord fabric shall be employed, and tests to determine the tensile strength of cords shall be made in ten individual cords taken from each roll. These tests shall be made in accordance with the following:

(1) The individual cords shall be tested in a fabric testing machine in which the distance between grips is approximately 10 inches, which grips separate at the rate of 20 inches per minute. The results shall be made up to the standard specification of the individual manufacturer.

(2) Beads shall be constructed with wire strands of the same size and as in standard commercial practice. Tensile strength tests for wire strands as used by the individual tire manufacturers in the construction of beads will be satisfactory in so far as they are sufficient to preclude any chance of a bead stretching or blowing off the rim under pressure.

(3) Two chafing strips of fabric weighing not less than 8 ounces per square yard shall be used. Each chafing strip must extend upward on each side of the tire at least 1 1/4 inches from the heel of the bead. One chafing strip shall extend at least 3 1/2 inches from the other.

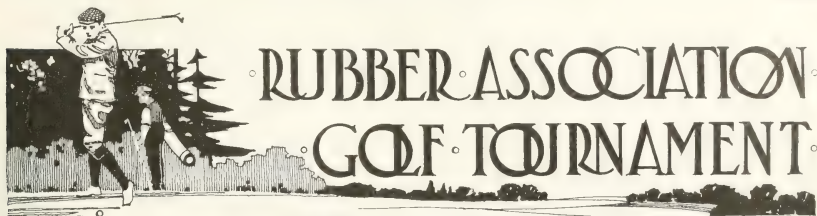
(4) There shall be a cushion or rubber compound applied over the cords which shall be wider than the breaker. The minimum gage of this cushion shall be .0625 inch.

(5) Over the cushion there shall be at least one breaker strip of open-weave fabric such as is used in standard commercial practice, coated on both sides with a rubber compound having the physical and chemical properties of a nature to form a perfect union between the cushion and tread when the tire is effected. This breaker strip shall have a minimum width of 3 1/2 inches. Breaker shall be made from the best quality S. A. E. 36 or of 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000.

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(5) Over the cushion there shall be at least one breaker strip of open-weave fabric such as is used in standard commercial practice, coated on both sides with a rubber compound having the physical and chemical properties of a nature to form a perfect union between the cushion and tread when the tire is effected. This breaker strip shall have a minimum width of 3 1/2 inches. Breaker shall be made from the best quality S. A. E. 36 or of 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 4



RUBBER ASSOCIATION PLAYS GOLF FOR THE SOLDIERS.

THE Second Annual Golf Tournament of the Rubber Association of America, held September 25, at the Trenton County Club, Trenton, New Jersey, was an unequalled success. The surplus receipts over and above the actual expenses of the tournament will be distributed equally between the American Red Cross, Knights of Columbus and Y. M. C. A. war relief funds.

J. A. Lambert, John S. Broughton, A. Boyd Cornell and L. P. Destribats met the visitors at the station and automobiles were waiting to carry them to the country club where they were cordially received by other members of the Trenton Rubber Manufacturers' Association.

The Tournament (eighteen holes medal play) in competition for the trophy cup—won by Trenton last year—, was managed by Horace T. Cook, J. Cornell Murray and Harold F. Blanchard. Fifty dollars in War Savings Stamps was donated by the Rubber Association of America as prizes for the best gross and net scores. The following were the competing teams:

NEW YORK.

	GROSS.	HDC.	NET.
E. M. Brunn	92	18	74
E. J. Campbell	92	14	78
A. E. Betteplace	91	5	86
C. W. Harrison	90	15	75
H. H. Cummings	90	17	73
J. H. Thomas	89	9	80
J. Lehman	89	14	75

THE WEST.

	GROSS.	HDC.	NET.
J. W. Herron	93	11	82
A. W. Thomas	92	12	80
Thomas Clements	90	13	77
L. E. Adams	89	13	76

NEW ENGLAND.

	GROSS.	HDC.	NET.
T. A. Ashley	88	9	79
A. L. Campbell	91	6	85
G. F. H. H.	100	14	86
T. F. Kimball	106	15	91

TRENTON.

	GROSS.	HDC.	NET.
J. C. Murray	91	7	84
H. J. Cook	85	0	85
A. B. Cornell	90	12	78
C. C. Stokes	91	12	79
L. P. Destribats	103	14	89

W. J. Kelly presided at the dinner and announced the following winners: New York won the trophy with 334 for the four

best net scores; the West was second with 335; New England, third with 344, and Trenton, fourth with 347. Eighty-five, the first best gross score, was won by J. W. Herron who received \$15 in War Savings Stamps. The second best gross was T. A. Ashley's score of 88 and he received \$10 in stamps. First best net was won by E. M. Brunn with 79 and the prize was \$15 in stamps. John W. Thomas won the second best net with a score of 82, receiving \$10 worth of stamps.

The only speaker of the evening, ex-Governor Stokes of New Jersey, then addressed the audience which was amused and thrilled by the wit and patriotic logic of this popular after-dinner orator. In conclusion a vote of thanks was extended to the Trenton Rubber Manufacturers' Association as well as to the Outing Committee of the Rubber Association of America, comprising W. J. Kelly, chairman *pro tem.*, L. P. MacMichael, A. A. Garthwaite, and H. S. Vorhis, secretary, for their united efforts that made possible this most enjoyable outing of patriotic rubber men on a day's vacation.

Among the Akron manufacturers present were Harvey S. Firststone and C. W. McLaughlin. A. D. Thornton of Montreal represented the Canadian manufacturers.

PERUVIAN LONG-STAPLE COTTON.

According to recent reports, there is at present a demand for American cotton gins and cotton baling machinery in Iquitos, the distributing point for goods for the whole of eastern Peru.

It appears that unusual interest has been aroused in the production of cotton and that the acreage is being extended. An excellent grade of cotton is raised from Sea Island seed imported from the United States. All of this cotton has an extraordinarily long staple, while the fiber is very silky, and compares favorably with the best Sea Island and Egyptian cotton. So far, all the cotton raised has been shipped to Liverpool, but producers are considering exportation to the United States as well.

CUSTOMS APPRAISER'S DECISIONS.

GUTTA SIAK.—Gutta Siak, classified under paragraph 502, Tariff Act of 1913, is crude gutta percha and should be admitted free of duty, on the protest of L. Littlejohn & Co., New York City. (Treasury Decisions, Vol. 35, No. 11, September 12, 1918.)



A REPRESENTATIVE GROUP OF MEMBERS AND GUESTS.

Annual Meeting of the Rubber Section of the American Chemical Society.

THE ANNUAL MEETING of the rubber section of the American Chemical Society was held in Cleveland, September 11-12, at the Hotel Statler. Dr. L. E. Weber, chairman of the section, was prevented by illness from being present, and in his absence George Oenslager, of The B. F. Goodrich Co., a member of the executive committee of the rubber section, was selected to preside. The program as announced in the September number of THE INDIA RUBBER WORLD was then taken up.

THE DETERMINATION OF LAMPBLACK.

A. H. Smith, of the Bureau of Standards, presented a very interesting description of the work they are doing on the determination of free carbon in rubber goods. The principal use of this method is to check the quality of the tires offered to the Government for war purposes, but the method has much wider applications. The essential point of this method is the complete removal by means of appropriate solvents and concentrated nitric acid, of all substances which would change weight on ignition, excepting the lampblack itself. The residue is then heated, and the loss in weight represents the carbon. A small correction is necessary to provide for the errors of the determination. This paper was discussed by Messrs. Evans, Tuttle, and Oenslager. Mr. Evans stated that this method had been used for a short time at the laboratories of The B. F. Goodrich Co. and found sufficiently accurate for commercial work.

LABORATORY METHODS FOR DETERMINING THE DEGREE OF VULCANIZATION.

Mr. Cranor gave a very excellent discussion, showing the difference in vulcanization between two compounds, one containing litharge as accelerator, and the other an organic accelerator. In the latter case he pointed out that complete vulcanization was reached before the ratio of combined sulphur to rubber showed a vulcanization equal to that of litharge. From this he concluded that physical tests alone were unsatisfactory in determining the correct vulcanization, and were absolutely worthless in determining small changes in vulcanization. He advocated chemical methods for vulcanization control, using for this purpose the combined sulphur ratio. He claimed this was much more sensitive than physical methods, and, the standard once set, it was comparatively simple and accurate to follow up.

THE FRUIT-JAR RING SITUATION.

The discussion on fruit-jar rings was opened by Charles P. Fox, who presented a very vivid picture of the conditions as he found them in the course of his investigations. He advocated the use of several simple tests, such as folding test, pulling test, and the twisting test. By means of these, purchasers of small quantities can instantly tell whether or not they have a good jar ring.

Mr. Fox's discussion was followed by remarks from Messrs. Tuttle, McGregor, Brock, Brittain, Warner and Danneneth. Mr. Tuttle stated that it is well known that a tremendous loss occurred during the year 1917, owing to the preserving of fruit in jars sealed by poor jar rings. The Government is working on this subject, but it is a question as to the progress made. He urged that the rubber section take up this subject with the idea of starting a campaign of education and driving the poor jar rings off the market. Mr. McGregor said that he understood the Canadian Government is working along the same lines. Mr. Brittain called attention to the fact that in many cases jar lids do not fit well, and therefore do not permit the jar ring to function properly.

Mr. Warner called attention to the way in which fruit-jar rings are marketed, stating that it is exceptional for them to be sold under the brand, or trade-mark, of manufacturers. They are sold through jobbers, and the same ring appears on the market under a number of different brands. This makes it difficult to trace bad rings back to the maker.

As a result of the foregoing discussion, it was decided to form a committee to be appointed by the chairman, whose duty it shall be to see that the attention of the public is drawn to this matter by a campaign of education, and also to work with the manufacturers and jobbers to ascertain what can be done towards establishing and maintaining a standard of quality. The chairman appointed as this committee the following: L. J. Plumb, United States Rubber Reclaiming Co., Inc., New York City; Charles P. Fox, consulting chemist, Cleveland, Ohio; A. H. Smith, assistant chemist, Bureau of Standards, Washington, District of Columbia; George Oenslager, chief chemist, The B. F. Goodrich Co., Akron, Ohio; and a representative of the Boston Woven Hose and Rubber Co., Boston, Massachusetts, to be announced later.

VULCANIZATION OF RUBBER AT CONSTANT AND BY A SERIES OF INCREASING TEMPERATURES.

The paper by G. D. Kratz and Arthur H. Flower was complete substantiation of the conclusions reached by Mr. Cranor. Mr. Kratz covered the subject very thoroughly, and in such detail as to leave no room for argument. The paper will be published at an early date, and no doubt will be carefully studied by all who are interested in this subject.

THE POISONOUS NATURE OF SOME ACCELERATORS AND PRECAUTIONS REGARDING THEIR USE.

The report of the committee on organic accelerators was read by the secretary, in the absence of Dr. Earle, chairman of the committee. The report was adopted by the meeting, and the officers of the section were instructed to see that this report receives wide publicity. The Council of the American Chemical Society has approved this report for publication.

Discussion of this report, and that on the jar-ring situation, brought out the need of a committee to investigate the relation of the rubber industry to public health. This matter was referred to the chairman, with power to act.

REPORT OF THE EXECUTIVE COMMITTEE.

The executive committee report, in the absence of Dr. Weber, chairman, was read by the secretary, and was adopted. In this report Dr. Weber stated that he would be unable to continue as chairman of the rubber section, and had therefore presented his resignation to the president of the American Chemical Society.

It was announced that the rubber section has no authority to elect officers, but that its officers are appointed by the president of the Chemical Society. However, in accordance with a previous understanding between Mr. Tuttle and Dr. Parsons, the secretary of the Chemical Society, the meeting proceeded to the election of candidates for the offices of chairman and secretary. The president of the American Chemical Society in the past has always approved of the choice of the section. The election resulted in the nomination of the following: chairman, John B. Tuttle, Firestone Tire and Rubber Co., Akron, Ohio; secretary, Arnold H. Smith, Bureau of Standards, Washington, District of Columbia.

A meeting was held September 12, to discuss informally the subjects which had been brought up the previous day, and to discuss plans for the coming year. At this meeting it was decided that it would be advantageous to prepare standard methods

for making physical tests and the chairman was instructed to appoint a committee for this purpose.

The attendance at Wednesday's meeting was about eighty, and would have been greater had the room been larger.

Among those present were the following:

John R. MacGregor, Eagle-Picher Lead Co., Chicago, Illinois.
 L. J. Plumb, United States Rubber Reclaiming Co., New York City.
 Frederick Danerth, Newark, New Jersey.
 E. C. Stokes, Seneca Rubber Co., Chicago, Illinois.
 C. D. Kratz, Falls Rubber Co., Akron, Ohio.
 Cole Coolidge, Falls Rubber Co., Cuyahoga Falls, Ohio.
 Arthur H. Flower, Falls Rubber Co., Cuyahoga Falls, Ohio.
 Charles P. Fox, Municipal Laboratories, Dayton, Ohio.
 W. D. Pardoe, Thermoid Rubber Co., Trenton, New Jersey.
 Walter H. Juve, The B. F. Goodrich Co., Akron, Ohio.
 Frank P. Brock, Redman Chemical Products Co., Chicago, Illinois.
 D. F. Cranor, Conshohocken, Pennsylvania.
 A. H. Smith, Bureau of Standards, Washington, District of Columbia.
 W. H. Hayt, Eagle-Picher Lead Co., Chicago, Illinois.
 Geo. P. Loomis, The B. F. Goodrich Co., Akron, Ohio.
 A. A. Cosler, The B. F. Goodrich Co., Akron, Ohio.
 W. L. Smith, The B. F. Goodrich Co., Akron, Ohio.
 Charles M. Knight, Akron, Ohio.
 M. M. Harrison, Miller Rubber Co., Akron, Ohio.
 R. J. Bonstein, Kelly-Springfield Tire Co., Akron, Ohio.
 C. P. Devine, Habirshaw Electric Cable Co., Yonkers, New York.
 John Young, Firestone Tire & Rubber Co., Akron, Ohio.
 E. C. Britton, Firestone Tire & Rubber Co., Akron, Ohio.
 E. W. Oldham, Firestone Tire & Rubber Co., Akron, Ohio.
 A. B. Merrill, The B. F. Goodrich Rubber Co., Akron, Ohio.
 H. B. Kahler, The B. F. Goodrich Co., Akron, Ohio.
 F. R. Monahan, Rubber Insulated Metals Corp., Plainfield, New Jersey.
 E. H. Gruffen, Manastan Rubber Manufacturing Co., Passaic, New Jersey.
 R. W. Waite, The Goodyear Tire & Rubber Co., Akron, Ohio.
 H. G. Pascoe, General Tire & Rubber Co., Akron, Ohio.
 C. A. Norris, Mechanical Rubber Co., Cleveland, Ohio.
 C. Peterjohn, Mechanical Rubber Co., Cleveland, Ohio.
 H. M. Koelliker, Mechanical Rubber Co., Cleveland, Ohio.
 J. D. Morgan, Mechanical Rubber Co., Cleveland, Ohio.
 W. H. Cope, Lee Tire & Rubber Co., Conshohocken, Pennsylvania.
 W. W. Evans, The B. F. Goodrich Co., Akron, Ohio.
 Herman H. Lowenstein, Chemical Warfare Service, Nashville, Tenn.
 L. D. Herty, Federal Rubber Institute, Chicago, Illinois.
 Lieut. Roscoe M. Gage, The B. F. Goodrich Co., Akron, Ohio.
 G. Lloyd Allison, The B. F. Goodrich Co., Akron, Ohio.
 C. Ashman, Bradley & Johnston, Inc., Peoria, Illinois.
 Helen C. Gillette, Prest-O-Lite Co., Indianapolis, Indiana.
 Zeuzo Kemski, Osaka Shosen Kaisha, New York City.
 W. H. Hewlett, Kokomo Rubber Co., Kokomo, Indiana.
 B. A. Allison, Barber Asphalt Paving Co., Madison, Illinois.
 W. S. Kimley, Hewitt Rubber Co., Buffalo, New York.
 F. W. Hoffman, The F. F. Goodrich Co., Akron, Ohio.
 P. H. Henkel, Continental Rubber Works, Erie, Pennsylvania.
 W. Scott, The Goodyear Tire & Rubber Co., Akron, Ohio.
 T. Kimishima, Imperial University of Japan, New York City.
 J. H. Link, Faultless Rubber Co., Ashland, Ohio.
 J. Sibley, The Goodyear Tire & Rubber Co., Akron, Ohio.
 M. M. Kahn, Kelly-Springfield Tire Co., Akron, Ohio.
 A. H. Peterson, Kelly-Springfield Tire Co., Akron, Ohio.
 J. Simmons, University of Akron, Akron, Ohio.
 C. W. Sanderson, The Fisk Rubber Co., Chicago Falls, Massachusetts.
 E. G. Marshall, Fort Madison, Iowa.
 C. S. J. Dalton, Mayfield Tire & Rubber Co., Mansfield, Ohio.
 K. I. Thompson, Columbian Tire & Rubber Co., Columbiana, Ohio.
 George Oenslager, The B. F. Goodrich Co., Akron, Ohio.
 John B. Tuttle, The Firestone Tire & Rubber Co., Akron, Ohio.

THE FOURTH NATIONAL EXPOSITION OF CHEMICAL INDUSTRIES.

THE Fourth National Exposition of Chemical Industries was held in the Grand Central Palace, New York, the week of September 23. Over 350 exhibitors participated and their displays covered three floors. Practically all of these exhibits had a bearing on the production of war material. The opening address of Dr. Charles H. Herty, chairman of the exposition's advisory committee, outlined the growth of the industry, showing its present position statistically, as regards exports in a few lines only, and indicating the possibilities for the future, and the invaluable aid the young dyestuff industry is rendering in the production of toxic materials for war purposes.

The daily program included symposiums on chemical topics and the exhibition of a large variety of moving pictures, changed each day, and covering a wide range of chemical and metallurgical manufactures and waterpower development.

Among the many instructive exhibits, those in the following list had special interest for the rubber manufacturer:

BARBER ASPHALT PAVING CO., Philadelphia, Pennsylvania, manufacturers of asphaltic products, among them Genasco brand mineral rubber.

THE BRISTOL CO., Waterbury, Connecticut, whose recording

thermometers and pressure gages are in use in practically every rubber mill. The output of this company includes their well-known recording instruments for temperature and time, with special fittings to adapt them to meet the requirements in rubber work; also new strip-chart type recorders and the Bristol patented safety set-screw. The total output of the latter is devoted to United States Government needs.

BUFFALO FOUNDRY AND MACHINE CO., Buffalo, New York, occupied a very large area in which was shown a line of heavy machinery such as vacuum dryers of commercial and laboratory size for rubber and other work.

J. H. DAY CO., New York City, exhibited their line of mixers with tight-fitting covers to conserve solvents, all of which find use in rubber mills where much cement is prepared.

J. P. DEVINE CO., Buffalo, New York, exhibited a few representative pieces of apparatus, which included a commercial size vacuum dryer and one for laboratory use. They also had on view a water still and a particularly heavy autoclave with mixing attachment.

HARRISON WORKS, Philadelphia, Pennsylvania. Extensive lines of paints and colors formed a portion of the extremely interesting and varied exhibition by E. I. du Pont de Nemours & Co. Zinc oxide, litharge and various other compounding ingredients of special purity and fineness for rubber makers' use were to be seen.

HUNTER DRY KILN CO., Indianapolis, Indiana, showed a model front end of their kiln, featured for the drying of rubber and equipped with direct reading hypometer. The results of the Hunter system of drying as exhibited in samples of crude rubber were extremely interesting. The process has advanced in favor very rapidly since its introduction to the rubber trade, and is now in use in practically fifty American rubber factories.

DR. FREDERICK MAYWALD, F. C. S., New York City, featured his analytic and rubber experimental laboratory in a series of photographic views, and in an informing circular set forth particularly the needs of the small manufacturer for chemical service.

NEW JERSEY ZINC CO., New York City. There is probably no rubber manufactory in America where the product of this company is unknown. Their exhibit set forth their products in an effective and interesting manner.

SCHAEFFER AND BUDENBERG MANUFACTURING CO., Brooklyn, New York, made an interesting display of pressure gages, thermometers and recording instruments adapted to every manufacturing need in such particulars.

F. J. STOKES MACHINE CO., Philadelphia, Pennsylvania, exhibited chemical machinery, rotary vacuum disks, and solvent recovery apparatus of interest in drying compounds, scrap rubber, etc.

WERNER & FLEIDERER CO., Saginaw, Michigan, exhibited their complete line of mixers for rubber and other work in neat laboratory sizes very convenient for examination and demonstration.

EXPORTS FROM BRITISH GUIANA.

From January 1, 1918, to May 30, 1918, the exports of balata amounted to 234,514 pounds, against 432,251 pounds for the same period last year—a considerable decrease, therefore. Figures for rubber exports over corresponding periods show an increase for the current year and are 5,831 and 4,935 pounds, respectively.

HONDURAS RUBBER EXPORTS.

During 1917, crude rubber to the amount of 35,156 pounds, value \$15,086, was invoiced at the United States consulate at Cuba and the agencies at Bonacca, Roatan, and Tela. The 1918 shipments to the United States from the same districts totaled 54,347 pounds, value \$33,004.

What the Rubber Chemists Are Doing.

STANDARD PLANTATION RUBBER.

A RESUME of the results of the investigation of Eaton and Grantham on the variability of plantation rubber has been published in the "Journal of the Society of Chemical Industry," by M. Barrowcliff, F. I. C., supplemented by a discussion of the M. C. T. process of coagulation. Details of this process will be found in *THE INDIA RUBBER WORLD* of April 1, 1918. The principal features of this paper are quoted below.

The reason for the obvious partiality shown by the manufacturer for Pará is that plantation rubber, even of the highest grades, varies in quality, the variations being considerably greater than those found in different samples of fine hard Pará. Much experimental work, dealing with the causes of this variability has been published, notably by B. J. Eaton and J. Grantham. It was found that it is almost solely in respect of the time of heating required to ensure correct vulcanization, that is, to afford a vulcanized rubber having the best mechanical properties, that the variations occur. Samples of plantation rubber, prepared by the different methods in general use, were found to require for the correct "cure" widely varying times of heating, at a constant temperature. Further, rubber made by the same process, on different estates, and at different times on the same estate, was found to vary greatly in this respect. When, however, the proper time of heating had been found and applied, relatively small differences were noted in the mechanical properties possessed by the vulcanized samples.

The fundamental fact established by Eaton and Grantham is that the same factor for correct vulcanization varies inversely according to the degree in which the rubber coagulum has been allowed to remain, subject to coagulation, unworked, and in contact with its serum. The longer this period the shorter the length of heating required to produce a correct cure.

Bearing this in mind, also the fact that the present custom is to machine the rubber on the day following coagulation, the influences exerted by the various factors introduced, in practice, into the manufacture of rubber from latex can be accurately foretold. The greater the extent to which the coagulum is machined, and the more completely the serum is consequently washed out, the slower the rate of "cure" of the rubber produced. This "crêpe" rubber, as now marketed, is the slowest to vulcanize. "Sheet" rubber, which receives a much less drastic machining and retains a considerable quantity of serum that drains out relatively slowly, cures in a much shorter time. "Slab," which receives no mechanical treatment, and in which 12 to 15 per cent of the moisture is allowed permanently to remain, vulcanizes still more quickly.

In the preparation of "smoked" rubber two variables are concerned: (a) the action of the smoke products; (b) the temperature of drying. The former retards the rate of cure, while the latter, within the limits attained in practice, accelerates it. Hence, "smoked" sheet may cure either faster or slower than similar smoked sheet, depending on the balance of these factors in the earlier stages of drying.

In the case of unsmoked rubber, the rate of drying similarly affects the vulcanization time factor. The same plantation drying-room may produce on different days, according to the temperature and atmospheric humidity, rubber having different rates of "cure," even if the moisture content of the wet rubber happens on each occasion to be the same.

The amount of serum left in "sheet" rubber depends on the machining it has been given. Eaton found that the more concentrated the latex, the more rapid is the rate of cure of the "sheet" afforded by it. The coagulum from the undiluted latex being thicker and harder, more serum is retained in it after the

"rolling" process; the rate of drying, consequently is slower than in the case of the thinner sheet afforded by the diluted latex, affecting in the way expected, the optimum time required for the "cure." Similarly, "differential" rolls and rolls of equal size and speed will produce sheet rubber requiring differing times of "cure," other factors being constant. The effect of employing acetic acid to coagulate the latex is to retard markedly the rate of cure. Little difference is occasioned, however, between acid-coagulated rubbers by variations in the amount of acid that has been used, within the limits met with in practice.

As is obvious from the foregoing, to produce a uniform rubber without some radical change in method would involve almost insuperable difficulties. One type of rubber only could be permitted. The way out of this difficulty is clearly indicated by Eaton and Grantham's further work.

It was found that the change which takes place in the rubber coagulum and causes the diminution in the time of heating required for vulcanization is completed in the course of a few days. Although the maximum effect appears to be attained about the seventh day, there is little change in the rate of vulcanization after three days, when the vulcanized rubber possesses the best mechanical properties. The slower progress of the changes in the coagulum, as compared with the slab is probably due to putrefactive changes having occurred. To obtain the best results the coagulum should be left unworked for three days. It is then immaterial to what extent the rubber is worked, in what form it is finished, or how quickly or slowly it is dried, the time of "cure" not being affected to any significant extent.

If, however, coagulation is carried out in the usual way with acetic acid in open vessels the rubber coagulum undergoes changes if kept such a length of time, which render the method unsuitable. Putrefactive action sets in, accompanied by darkening of the coagulum, while spot diseases which have been shown to cause an extraordinary retardation of "cure" are likely to develop during the subsequent treatment.

A new procedure is required, therefore, and seems to be furnished by the method introduced by M. Maude and W. S. Crosse, known as the M. C. T. process. It is based on the fact that in closed vessels latex coagulates completely without the addition of acid and without at the same time undergoing putrefactive changes. As now carried out in practice, large cement tanks provided with heavy water-sealed covers are used. These are filled with the bulked latex, leaving the smallest possible air space. The covers are affixed and sealed and left undisturbed until the following day, when the coagulation is found to be complete. The resulting coagulum is converted into "crêpe" in the usual manner.

Addition may be made to each 100 gallons of latex of a quantity of a soluble calcium salt, namely, calcium acetate or sulphate (gypsum), corresponding to four ounces of calcium. The effect of this is to accelerate the coagulation. A beneficial effect on the properties of the rubber may also be produced. In this connection the fact should be noted that whereas the soils of the Amazon region are well supplied with lime, those of the Malay peninsula are remarkably deficient in this respect. Further, the Pará method of coagulation favors the retention of calcium compounds in the rubber, while acid coagulation tends to remove them. These points may be not without bearing on the causes of such differences as may exist between Pará and plantation rubber.

Regarding his comprehensive series of tests of crêpe, unsmoked sheet, smoked sheet, and slab rubber made by the M. C. T. process, B. J. Eaton states: "All the samples possess excellent tensile properties, equal to the best samples of plantation sheet and

crêpe, and prove that the process is capable of producing rubber of excellent quality."

Eaton's tests show the remarkable uniformity of the sample of crêpe rubber, considering that they represent the produce of old and young trees; of pure latex and latex diluted with water, and of rubber made on different days. The rate of cure was found to be more rapid than in the case of the standard sample of crêpe, a result attributed by Eaton to the absence of acid.

The figures given by Eaton show that this method of coagulation affords, at least, rubber equal in all respects to the best now being produced by acid coagulation and of greater uniformity. The point upon which stress requires to be laid, however, is that it is a process, and seemingly the only practical one, by which the coagulum may be allowed to mature for the length of time essential for eliminating the differences that otherwise result from unstandardized subsequent treatment.

For the production of "standard" rubber the bulked latex from a day's tapping requires to be placed in the coagulating tanks, as described above, and allowed to remain undisturbed for a fixed time, which it is suggested, should be three days. Under these conditions no putrefaction occurs and the coagulum remains perfectly white, except for a slight surface darkening.

Judging by the considerations advanced above, the rubber so produced, whatever the source, or whether finished as crêpe or sheet, would show no variations in the time of heating required under standard conditions for correct cure, while the vulcanized material would possess the maximum attainable textile strength. The cure would be substantially quicker than that of Pará under similar conditions, but this is an advantage, as it enables the manufacturer, while heating for the same length of time, to vulcanize at a lower temperature, which is all to the benefit of the finished material.

The result of the general adoption of the above described method of operation would be the production of a plantation raw rubber as uniform in its vulcanizing properties as fine hard Pará, and one affording at least an equally satisfactory product.

CHEMICAL PATENTS.

THE UNITED STATES.

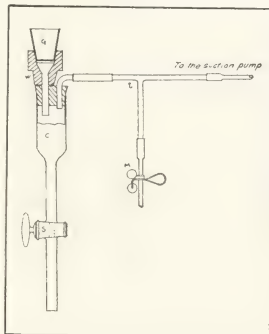
PROCESS OF MAKING A SUBSTITUTE FOR WHITING.—A product known as artificial whitening manufactured by processes similar to those employed in the conversion of natural chalk into whitening precipitated chalk, or other forms of calcium carbonate. With such artificial whitening, either during or after its manufacture, an organic salt or soap is incorporated. The whitening if neutral is made to contain free alkali or lime and an organic derivative is added which will convert the free alkali or lime into a salt or soap. Such addition may consist of oleic acid, tannic acid, benzoic acid, or any of the higher organic fatty acids, or a phenol, such as carbolic acid, or alpha or beta naphthol. (Herman B. Kipper, Solvay, New York. United States patent No. 1,264,392.)

VULCANIZATION OF RUBBER.—A method of accelerating a vulcanizing process which consists in adding to the rubber mixing an accelerator comprising caustic alkali dissolved in a hydroxy-organic compound forming a solvent which is not decomposed by the alkali. The solvent specified is glycerol or glycol. (Douglas Frank Twiss, Sutton, Colfield, England, assignor to The Dunlop Rubber Co., Limited, Westminster, London. United States patent No. 1,271,810.)

PROCESS OF VULCANIZING RUBBER SHOES.—The articles are heated by the application of a heating medium applied to one side while maintaining the opposite side free from contact with a condensable heating medium, and when the article has been sufficiently heated to prevent condensation thereon, then subjecting the opposite side to a condensable heating medium at a vulcanizing temperature. (Charles E. Bradley, assignor to Mishawaka Woolen Manufacturing Co., both of Mishawaka, Indiana. United States patent No. 1,271,843.)

LABORATORY APPARATUS. FILTERING TUBE.

THE apparatus shown was designed particularly for handling those precipitates whose solubilities necessitate great economy with the liquid used for transferring and washing.

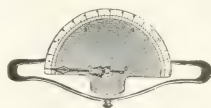


A straight glass tube, having a stop cock at its middle point, is sealed to a carbon filter tube. The latter is fitted with a two-hole rubber stopper. The stem of a Walter crucible - holder passes through one hole of the stopper while the other contains a right-angled exit tube. The connection leading to the suction pump is intercepted by an ordinary T-tube, the free end of which is joined to a short piece of rubber tubing as an air inlet.

In operation, the perforated crucible G with prepared asbestos felt, is set in collar W. Once adjusted, the suction needs no interruption throughout the filtration. When cock S and clamp M are closed, the tube C serves as a small filter flask. When Clamp M is opened and pushed past the shoulder onto the tube T, atmospheric pressure is restored within the apparatus; then on opening cock S, portions of the filtrate can be delivered into the original beaker. ("Journal of Industrial and Engineering Chemistry," by permission Chemical Director, E. I. du Pont de Nemours & Co.)

DYNAMOMETER.

The illustration shows the type of dynamometer used in the so-called "barbecue" test for determining the adhesion of soft



rubber to hard in solid truck-tires. It consists of a calibrated elliptical spring which flattens under the strain applied to the end loops, thus imparting motion to the indicating mechanism in the rear of the dial. The instruments have an extra pointer which is loose and which remains at maximum strain after load is released. Capacities vary from 500 to 5,000 pounds. (John Chatillon & Sons, New York.)

FISH SCALE RUBBER.

The "Scientific American" devotes much space to the success an inventor has attained in compounding fish scales and rubber. According to the tale, the compound vulcanizes and forms a tougher product than has previously been discovered. It is a thousand to one that fish scales as a compounding ingredient are no better than hundreds of other ingredients already in use. The fact is, anything dry can be incorporated with rubber, and the mass vulcanized. The test is what sort of a plastic, if any, can be produced from fish scales without rubber. If alone, they do not sheet and show resilience, the resilience found in the rubber and fish scale combination comes from the rubber and from nothing else.

When you buy War Savings Stamps you do not give - you receive.

The Allocation of Sulphur.

PRIOR to the allocation of sulphur by the United States Government, William G. Woolfolk, Commodity Chief, War Industries Board, asked The Chemical Alliance, Inc., a body representing the entire chemical industry, to furnish a concrete plan covering the allocation of brimstone, pyrites and coal brasses.

At a special meeting the directors of The Chemical Alliance, Inc., affirmed their desire to handle the allocation of sulphur materials and appointed a Committee on Production, Distribution and Control of Sulphur Materials to work out the details of the plan to serve Mr. Woolfolk in an advisory capacity in carrying out the authority conferred upon him by the War Industries Board. The committee consists of three directors of the Alliance, as follows: A. D. Ledoux, chairman; W. D. Huntington, and C. G. Wilson.

In order that the trade may be advised of the proper method of procedure to get sulphur-bearing materials, the following statement has been issued by The Chemical Alliance, Inc.:

Because of the shortage of pyrites, due to the curtailment of Spanish ore, made necessary for the conservation of shipping, the War Industries Board has for months past been giving serious consideration to the question as to the best method of dealing with the important subject of sulphur materials.

The Chemical Alliance, Inc., being a body representing the entire fertilizer and chemical industries, and very closely associated in an advisory capacity with all government departments interested in the promotion of chemical manufacture and agriculture, was asked by the War Industries Board to furnish a concrete plan for handling sulphur materials.

It will be noted that the War Industries Board has taken full control of all sulphur materials by the following resolution:—

Due to the increased demand by the Government for sulphur, in the manufacture of explosives and for other purposes, and to the increasing burdens on the rail and water transportation systems, control of the production and distribution of sulphur materials has become necessary to insure, as far as possible, an adequate supply to the Government and an equitable distribution of the surplus to other users; therefore be it

Resolved, That the War Industries Board will assume control of sulphur materials, and hereby authorizes Mr. William G. Woolfolk, commodity chief in charge of pyrites and sulphur, to act for the board in controlling the production and distribution of sulphur materials, availing of such voluntary assistance as he may see fit of individuals or committees representing the producers and users of sulphur materials, and, in case any producer or consumer declines to abide by the decision of the War Industries Board, commanding orders will be issued where necessary.

It is the duty of the committee to obtain from producers and consumers such information as they deem necessary to enable satisfactory control, which extends to all imported as well as domestic sulphur materials. The committee's work will be materially lightened if all producers and consumers will furnish the information which may be asked for without loss of time, and meet the situation in the same patriotic manner as they are now doing in other matters.

Inquiries, including the matter of sale or purchase of sulphur materials, should be addressed to the Committee on Production, Distribution and Control of Sulphur Materials of The Chemical Alliance, Inc., at either room 135, Interior Building, Washington, District of Columbia, or 15 William street, New York City.

The work of this committee is now well under way. Detailed information is being acquired regarding the production or consumption of all firms concerned, stocks on hand, amounts needed, transportation facilities and increased production problems, and the committee is rapidly placing itself in a position to allocate material and assist industries using sulphur materials while still making certain that the government war program shall not suffer. Allocation will be by agreement as nearly as possible, since it is the desire to depend

largely on the cooperation and patriotic spirit of those concerned. It is only when an improper spirit is shown that drastic action may be necessary.

The chairman, A. D. Ledoux, states that such alarming articles as have recently appeared in the daily press regarding an alleged sulphur shortage are misleading and unfortunate. There is no shortage in the sense that the material is giving out, but it is difficult to obtain under present conditions of transportation and labor. We have hardly begun on the great brimstone deposits of Louisiana and Texas; numerous producers of pyrites east of the Mississippi will furnish a large supply in the aggregate, and there are heavy deposits of pyrrhotite to be resorted to if necessary. The problem is largely a matter of allocation of our supplies and transportation, essential uses naturally being given first consideration. Very large stocks of sulphur, Mr. Ledoux asserts, are already mined, and from the present outlook the rubber trade need have no uneasiness in regard to its supplies.

All users of sulphur, however, should realize that while the present outlook shows a sufficient supply for our essentials, it should not be wasted, and an earnest effort should be made to conserve its use to the greatest possible extent. As in the case of crude rubber, steel, sugar, and all basic materials, we are expected to do our utmost to produce, utilize and conserve the materials which are nearest available and so assist the transportation problem by rail and water, which after all is the real difficulty, and thereby facilitate increasing the flow of troops and supplies to France. It is not logical to haul material a thousand miles where there is other material close by the manufacturer's plant. It is not right that one firm should pile up heavy stocks to last for many months while another firm not far off is suffering because of inadequate stocks. In such an instance, a producer would be expected to ship his material to the one who needed it, and the manufacturer having the large stocks would be expected to stop receiving more until matters were evened up. It is along these general lines that the committee intends to work, and both Mr. Ledoux and Mr. Woolfolk are the sort of men who can be relied on to exercise their authority fairly and wisely in keeping industries running.

UNDEVELOPED SULPHUR DEPOSITS.

In response to the editorial and article on the sulphur situation in *THE INDIA RUBBER WORLD* of August 1, 1918, the following letter has been received:

As the writer is in touch with the owners of certain sulphur deposits, would it be possible for you to give me the names of corporations seeking independent sulphur supplies for their own needs, as referred to in the last paragraph of your editorial? Or, any other means you might suggest whereby we could place the sulphur deposits to the benefit of the industry.

SULPHUR CAN BE SAVED IN RECLAIMING SCRAP RUBBER.

In a recent letter to the Editor, a prominent chemist of the Middle West expresses himself as follows:

In the August issue of your valuable paper you refer to the restriction on the use of sulphur and seem to make light of it, as research and science have proved that it can be replaced. It is all right to keep on smiling, even if you hear some unpleasant news. But the fact will not be changed that the place of sulphur will not be taken by any other substance—at least for the duration of this war. All that we can do is to save sulphur, use it more economically and not waste it.

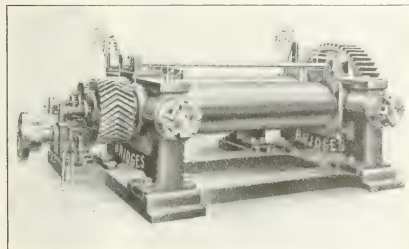
In giving out the slogan, "Don't waste sulphur," I am thinking of the enormous amounts of sulphur in scrap rubber which are destroyed by the reclaiming process. This sulphur can be saved in numerous cases and a very high-grade reclaimed is obtained. You were referring to this process in *THE INDIA RUBBER WORLD* about eight months ago.

New Machines and Appliances.

ENGLISH TYPE SINGLE-GEARED MIXER.

SEVERAL novel features in heavy mill construction are embodied in the single-gear mixer shown in the accompanying illustration. The rolls, 22 inches front and 26 inches back, by 84 inches wide, are of chilled cast iron, the working faces being ground and polished. The necks of the rolls are 16 inches in diameter and journaled in heavy boxes, lined with the best phosphor bronze. Sight-feed lubricators supply oil to the bearings and large steam inlets and outlets of an improved type are provided. The massive cast-iron side-frames that support the rolls are fitted with strong steel caps and the frames are bolted to a heavy cast-iron bed plate, six inches deep. The rubber compound guides are of an improved adjustable type, provided with a steel stay-bar that takes up the thrust on the guides during milling operations. The roll-adjusting screws are of large diameter with square threads and equipped with capstan heads for large roll-adjusting bars. The cast-iron safety nuts are designed to fracture when the strain on the machine is excessive.

The main driving-gear, which is a cast-iron machine-cut spur-gear with 14-inch face and $3\frac{1}{2}$ -inch circular pitch, is keyed to the back roll and driven by a machine-cut steel pinion on the shaft and operated by a dog or claw clutch. The



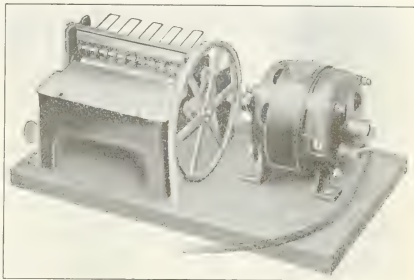
pinion can be made to slide on the shaft if two or more mills are arranged on one line. The front roll is driven from the back roll and the herring-bone gears are cast-steel, machine-molded with long teeth to allow for roll adjustment. They are 14 inches wide and three-inch circular pitch. (David Bridge & Co., Limited, Castleton, Manchester, England.)

UNIVERSAL LABEL-PASTING MACHINES.

These machines afford a quick and efficient means for applying paste to labels or, in fact, to any surface, thereby doing away with the unsanitary paste pot and brush. One type of machine is designed to apply paste to the edges of surfaces, and another is used to moisten gummed labels up to 5 inches in width. This machine is also adapted for moistening stamps where large quantities are used.

The operation is quite simple and requires only ordinary intelligence to produce satisfactory work in quantity. All that is required is to remove the front cover, fill the paste box about one-half full, and replace the cover. The label is then laid on the front plate and fed between the rolls that are operated by a motor-drive, or by hand power if so desired. The amount of paste is regulated by adjusting the feed-roll scraper located in the paste box.

These machines are furnished with motor-drive in three sizes, operated by direct or alternating current or by hand, No. 1 taking labels up to five inches wide, No. 2 up to eight

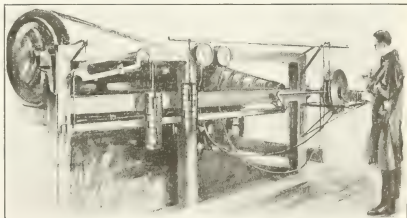


inches wide, and No. 3 up to twelve inches wide. The No. 4 machine applies paste to the edge of a sheet or wrapper over a space from $\frac{1}{8}$ -inch to $\frac{3}{4}$ inches wide. The No. 5 machine is used for applying water to gummed labels or stamps and the No. 6 machine is an improved model with the same dimensions as machine No. 1. (A. G. Prior, 665-671 Broad street, Newark, New Jersey.)

BRAKE-LINING TESTING MACHINE.

The production of brake lining has become a firmly established branch of the rubber industry and manufacturers are supplying the automobile trade and makers of machinery requiring clutch facings with a material that will withstand severe usage under varying conditions.

A special testing machine that has been designed to determine the wearing resistance of brake linings, subjects the material to a wearing pressure of 50 pounds to the square inch for a period of 20 hours, and at a temperature of 212 degrees. The percentage of wear shown in this test indicates the heat-resisting quality of the fabric and the absence of combustible material in the



brake linings. Furthermore, the machine is arranged so that the lining can be subjected to any pressure and immersed in oil or water, or covered with dirt, and by a system of weights it is possible to determine exactly the amount of pressure required to bring a car of any weight to rest in any space. (Standard Woven Fabric Co., Walpole, Massachusetts.)

HYDRO AIR-COMPRESSOR FOR INFLATING TIRES.

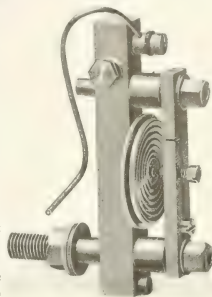


The possibility of oil being carried into rubber tires with the air when a power driven air compressor is used, may be obviated by the use of a compressor operated by water pressure. The standard garage air-compressor here shown will deliver clean air at any desired pressure, no reducing valve or other device being used. The makers claim that the standard compressor will deliver 40 cubic feet of free air per hour at 105 pounds up to 110 pounds, at water pressure of 75 pounds; 35 cubic feet with 65 pounds of water; 30 cubic feet with 56 pounds of water; 27 cubic feet of free air with 50 pounds of water. All air pressure same as first named. (The Dunn Hydro Com. Denver, Colorado.)

AERO AUTOMATIC FIRE ALARM SYSTEM.

This system is built on the principle that air expands with the application of heat. In applying this principle, loops of fine

copper tubing, spaced twenty feet apart, are affixed to the ceiling of the factory or warehouse. These loops vary in length with a maximum of one thousand feet according to the local conditions. The loop, or aero circuit, terminates at both ends in a flexible silver diaphragm. Expansion of the air in the tubing bulges the diaphragm outwards and makes an electric contact with a fixed-point contact screw. The making of this contact closes an electric circuit, causing the bells and other signals to operate effectively.



Whenever there is a variation in the temperature of the atmosphere the pressure in the aero tubing correspondingly fluctuates. The pressure increases with the increased temperature and decreases with the decreased temperature. To prevent unnecessary alarms an instrument called a "compensating leak valve" is inserted between the diaphragm and the aero circuit. Its function is to allow the pressure in the tubing to equalize that of the air outside the tubing until actual fire conditions exist.

The alarm bells do not ring, except under fire conditions, because a pressure sufficient to affect the diaphragm and to make an electric contact cannot be attained until the growing pressure in the tubing exceeds the equalizing capacity of the leak valve. Herein lies the value of the system; it is sensitive to fires at their inception, sounding the alarm when the fire can be extinguished with the fire buckets and plant extinguishers. Each fire area has its own distinctive code signal. (Aero Alarm Co., 26 Cortlandt street, New York City.)

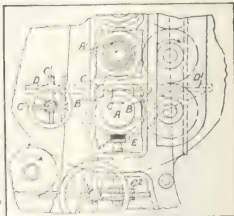
CAST HIGH-SPEED STEEL BY NEW PROCESS.

The Cutler-Hammer Manufacturing Co., Milwaukee, Wisconsin, has recently built a new foundry, 50 by 75 feet, in which to manufacture high-speed steel which is made by blast firing by a special process and then cast. This is one of the first attempts to cast high-speed steel. The foundry has a maximum capacity of 1,000 pounds daily.

MACHINERY PATENTS.

CALENDER ADAPTED FOR FILLING MOLDS.

Moulds are filled with rubber or amalgam composition by passing them between the bottom rolls, *A* and *A'* of a three-roll calendar. The bearing-blocks *B* of the roll *A* are adjustable by means of eccentrics *c* mounted upon shafts adjustable by worm gearing *c'*, *C*. The blocks *B* are mounted upon supports *E* having resilient pads *e* of rubber that are adjustable by gearing *a'*. Tables *D* and *D'* for the feeding and delivery of the molds are attached to the bearings *B*; or conveyors may be used. (A. F. Hawkins, Spring Bank, Hough Lane, Leyland, Lancashire, England. British patent No. 116,787.)



OTHER MACHINERY PATENTS. THE UNITED STATES.

- N^{O.} 1,273,183. Die-casting machine for casting automobile tire patterns. A. J. Mather, assignor to The Flexible Fabric Tire Co. of Akron, Ind.
1,74,467. Machine for making air-seal valves in solid tires. W. C. Stevens, assignor to Firestone Tire & Rubber Co.—all of Akron, O.
1,275,491. Collapsible tire-core. C. Stein, Akron, O.
1,275,858. Tire core. V. L. Cox, assignor of one-half to A. Schonenberger—both of Akron, O.
1,275,072. Tube-wrapping machine. J. G. Moomy, Erie, Pa.
1,275,794. Tire-building machine with revolvable core. J. D. Thomson, assignor to The Goodyear Tire & Rubber Co.—all of Akron, O.

THE DOMINION OF CANADA.

- 184,498. Sectional core for making inner tubes. The Mercer Tire Co., assignee of H. Dech—both of Trenton, N. J., U. S. A.
184,563. Tire-wrapping machine. O. E. Heckman, Akron, O., U. S. A.

THE UNITED KINGDOM.

- 116,774. Means for collapsing tire cores. Wood-Mine, Limited, Ribbles Bank Mills, Preston, and W. Ford, Meadow street, Leyland, Lancashire.
117,005. Mixing machine for plastic substances. J. E. Pointon and Perkins Engineers, Limited, Westwood Works, Peterborough.
117,097. Machine for extruding plastic rubber, etc., in pipe or other form. J. Stratton, The Limbics, Winton Road, Rowdon, and E. A. Claremont, Broom Cottage, High Legh—both in Cheshire.

THE FRENCH REPUBLIC.

- 480,595. Apparatus for vulcanizing. A. Robert, A. Dessauls and A. Barner.

PROCESS PATENTS. THE UNITED STATES.

- N^{O.} 1,274,996. Tire-casing manufacture. R. J. Ayers, assignor to The Goodyear Tire & Rubber Co.—both of Akron, O.

THE UNITED KINGDOM.

- 116,674. Method of manufacturing seamless rubber hot-water bottles. G. Cain, 16 Whitford Gardens, and Mitcham Rubber Co., Morden Road—both in Mitcham, Surrey.

A NEW DIVIDED DEMOUNTABLE RIM.

A divided demountable rim is the invention of Joseph Stungo, of Edinburgh, Scotland, who has spent practically a life-time in the tire and rubber business. It is most simple in construction and requires no special wheels, as it will fit any wheel made for a detachable rim. All that is necessary with this rim is to open four hooks on the inside, which may be done with the fingers, and one-half of the rim lifts off, leaving the casing exposed for the removal of the inner tube. The repair being made, the half-rim is replaced and the hooks slipped over the pins, when the rim is ready for service. It can be easily adjusted by an inexperienced person without the use of tools. The rim is owned by the American Rim, Tire & Rubber Co., Pittsburgh, Pennsylvania, a Delaware corporation.

The Editor's Book Table.

COTTON AND OTHER VEGETABLE FIBRES: THEIR PRODUCTION and Utilization. By Ernest Goulding, D. Sc., F. I. C., with a preface by Wm. R. Dunstan, C. M. G., LL. D., F. R. S., John Murray, London, England. (Cloth, 8vo, 231 pages, illustrated. Price, 6 shillings, net.)

THIS volume of the Imperial Institute Handbooks to the Commercial Resources of the Tropics consists primarily of an exhaustive study of cotton as the most important of vegetable fibers. Sections are devoted to a description of the cotton plant; an account of the structure and composition of the fiber; methods of cultivation with details of the cultural systems adopted in the United States and Egypt, diseases and pests, and the preparation of cotton for the market. Particulars are given as to the production and varieties of cotton in the chief cotton-growing countries of the world, including the United States, Egypt, India, Peru, Brazil, Mexico, Asiatic Russia, China, Japan, and various British colonies, together with statistics of trade and market prices.

THE PHILIPPINE JOURNAL OF SCIENCE, CONTENTS AND INDEX, volume I (1906) to volume X (1915). Bureau of Science, Department of Agriculture and Natural Resources, Manila, Philippine Islands. (Paper covers, 7 3/4 by 10 1/2 inches, 442 pages. Issued free to subscribers, having volumes XI and XII of "The Philippine Journal of Science"; price to others, \$2 United States currency.)

This comprehensive list of contents and index to the first ten volumes of "The Philippine Journal of Science" has been in preparation since 1915 and consequently purports to be complete in its inclusion of everything which has been published in the "Journal," together with correction of errors and omissions from the yearly indices. The book contains the table of contents, and author and subject indices, so that any article can be readily located.

REPORT OF THE CEYLON CHAMBER OF COMMERCE AND INDUSTRY for the year ended 31st December, 1917. (Paper cover, 247 pages, charts, tables.)

A preliminary survey of trade in general, freight and important legislation, is followed by a more detailed report of business in the chief commodities imported and exported, rubber being included among the latter. Tables of imports and exports, average prices obtained for Ceylon products and a chart showing the weekly rise and fall in the prices and quantities of rubber of all grades offered at local auctions during 1917 amplify the statements in the report. Correspondence on important measures taken by the British and local governments cover, among other subjects, rubber export restrictions, the packing of rubber, and shipping regulations. Lists of members and of officers past and present, justices of the peace, holidays for the year 1918, arbitrators and surveyors, and the minutes of the general meeting, complete the volume.

A VALORISACAO DA BORRACHA E O PROCESSO DE COAGULACAO ("Curing of Rubber and the Process of Coagulation"). Instituto Commercial de Para. Para. (Paper cover, 29 pages.)

In view of the fact that the Brazilian Government is attempting to help the rubber industry, whose condition is causing much concern, by urging the adoption of the coagulating process known by the name of the inventor, Dr. Cerqueira Finto, the Associação Commercial do Pará has addressed this pamphlet of protest to the Minister of Agriculture, Industry and Commerce.

The association points out that in spite of the fact that Dr. Pinto's method was first introduced in 1913, it has not succeeded at all in displacing the primitive process of coagulation in use. Investigations at that time showed that rubber prepared with Dr. Pinto's coagulant equalled plantation crêpe, but was inferior to smoked fine Pará. Various foreign authorities are quoted to show that the process of smoking, which

would be abandoned where the "Cerqueira Finto" preparation was employed, is in fact responsible for the superior quality of Pará rubber. Consequently, the association is of opinion that so far from discouraging coagulation by smoking in favor of the proposed chemical preparation, the Government should aim at improving the existing method by promoting the use of simple and cheap machinery to facilitate the labor of the *seringueiro* and at the same time to protect his health.

TECHNISCHE ANALYSEN. BY DR. IR. H. I. WATERMAN. Technische Boekhandel G. van Herwinen, Dordrecht, Netherlands. (Paper cover, 36 pages, illustrated.)

This little book is intended as a manual for practical exercises in the chemical laboratory, and discusses a dozen different subjects, among which may be mentioned the examination of lubricating oils, heat of combustion of solids, liquids, and gases; examination of white of lead, ultramarine, lithopone, zinc white, ochre, water, and copper sulphate.

NEW TRADE PUBLICATIONS.

THE MORSE CHAIN CO., ITHACA, NEW YORK, HAS RECENTLY published a booklet of data sheets containing useful information regarding silent chain drives. It is illustrated with cuts of engines and drives, covering the subject of the number of teeth and links, lubricating and venting, sprocket materials, chain widths, chain contacts, chain adjustments, etc. It will be sent free on request.

* * *

"THE RUBBER LEAF" IS A 24-PAGE MONTHLY PUBLISHED BY THE employees of the McGraw Tire & Rubber Co., East Palestine, Ohio. It is ably edited by W. E. Palmer, and contains, aside from breezy personal mention, much good humor and helpful suggestion.

* * *

THE STENOGRAPHIC REPORT OF THE PROCEEDINGS AT THE luncheon given by The Rubber Association of America, Inc., for the War Service Committee of the Rubber Industry of the U. S. A., July 31, 1918, at the Waldorf Astoria, New York City, has been published as a permanent record in pamphlet form by the Association.

* * *

"NUMBER FORTY," AN ILLUSTRATED MONTHLY NEWSPAPER FOR druggists, published by the Faultless Rubber Co., Ashland, Ohio, has made its first appearance, dated September. While featuring "Weavever" sundries, it aims to present rubber news and sales methods of interest and value to the drug trade.

* * *

"HOW TO INCREASE TIRE MILEAGE," IS THE TITLE OF AN attractive illustrated pamphlet of 64 pages which has been issued for distribution among its patrons by the Firestone Tire & Rubber Co., Akron, Ohio. Responding to the urgent necessity of the times to make pneumatic tires perform their utmost service, this little handbook tells in detail by word and picture how to select the right tires and tubes, how to use, care for and repair them, and shows the result of neglect in each instance.

* * *

"THE DUTCH EAST INDIAN ARCHIEPELAGO" IS A MONTHLY commercial publication recently started in Java and printed in English. J. Veersma, Batavia, is the editor, and A. A. van der Kolk, Buitenzorg, is the publisher.

The aim of the journal is to present to enterprising foreigners all possible information regarding the Dutch colonies, with the idea of promoting new relations between these parts and the rest of the world.

Interesting Letters From Our Readers.

ONE HUNDRED THOUSAND ACRES OF RABBIT BUSH.

TO THE EDITOR OF THE INDIA RUBBER WORLD:

DEAR SIR:—In your article, "The United States Can Produce Its Own Rubber," reprinted in part by the "Literary Digest," you refer to getting rubber from rabbit bush. I am sending you a sample to test and advise me if it contains much rubber. As I know of 100,000 acres of rabbit bush. This place I refer to consists of 165,000 acres, but I allow 65,000 acres as likely to be clear—not covered with other bushes. This bush grows at an elevation of 4,000 to 5,000 feet and stands between four and six feet in height. The sample is between five and six feet. Does the strong odor have anything to do with the rubber? There is water to be had if necessary. Can you give me the name of a rubber company to which I may write? Will you be so kind as to forward to some interested company the sample of rabbit bush which I am sending to you?

Thanking you for your attention, I remain,

Very respectfully,

MRS. FLORENCE E. DAVIS.

Los Angeles, California.

MORE REGARDING AMERICAN-GROWN RUBBER.

TO THE EDITOR OF THE INDIA RUBBER WORLD:

DEAR SIR:—The interesting article, "The United States Can Produce its own Rubber," in the June issue of THE INDIA RUBBER WORLD, unlocks some valuable information concerning the possibilities of another source for the production of crude rubber in Northern America.

The article and the editorial comment emphasize a vital need; and they go far towards lifting the veil of uncertainty that has clouded the horizon of a new and needed industry.

Waiving the claims of guayule and pingué as being the most valuable native plants for the purpose indicated, and assuming that their value as economical producers of crude rubber is entirely too dependent upon the influence of irrigation on the quality and quantity of the caoutchouc, we can take up a discussion of the Hall-Goodspeed discoveries and add a few words of continuation.

The two plants mentioned, the giant rabbit bush, (*Chrysothamnus*) and the dwarf rabbit bush, (*Ericameria*)—belong to the great *Compositae* family, and are relatives of the guayule (*Parthenium*) and pingué (*Actinella*). Both of the new plants contain rubber and allied compounds. In certain qualities they both excel the latter plants. The natural growth of both the guayule and pingué is limited by local factors of altitude, moisture and wind.

Both of these new sources of crude rubber, especially the giant rabbit bush, have a much wider range of territory, altitude and soil selection. The giant rabbit bush is a foot-hill or mountain plant which selects dry rocky places along or in the beds of dry gullies. It is not very abundant. The dwarf rabbit bush is an inhabitant of the plains, is very abundant, and can be readily propagated. A most valuable characteristic of this plant is its ability to thrive on alkali flats. It is also drought-resisting to a marked degree.

We grant without discussion the claims for these plants concerning their abundance, range or territory, and suitability for cultivation under the most adverse conditions. As to their value as producers of rubber of a grade better than or even equal to that of guayule, I am not so confident. Of the two plants, the quality of the giant rabbit bush product seems to be a shade better. The product from the dwarf rabbit bush is inferior, being tacky; but the yield is larger and there is also a valuable resin and essential oil.

However, the soft character of this rubber may have been caused by a deplomerization due to storage of the dry plant previous to extraction. Under these conditions such a change takes place in guayule. In the matter of priority of discovery of rubber in these plants, there will exist a doubt.

The smaller bush is known as "grease wood" on account of its burning qualities, and the stain made upon dry soil by an exudation from the plant. From a description of the plant, the writer is inclined to the opinion that it is the same plant worked by Werner and Ellis, who obtained a patent covering their process and product in 1902. In 1903, while investigating the Colorado rubber weed (pingué), the writer had both of these plants under observation. Laboratory results, obtained from samples of these plants from southern Colorado, balanced against yield and nat-

ural supply, and other economic factors, were not of sufficient importance to warrant a venture in their direction. About 1905, a sample of the dwarf rabbit bush was forwarded to the Diamond Rubber Co., Akron, Ohio, from Silver Creek, Colorado. This sample also contained a small amount of rubber, much resin and an essential oil. The resin would be of value in frictions and the essential oil useful in scenting soap. The resin being of the saponifiable type, it can be made directly into a natural-scented soap. As these oils are usually highly antiseptic, such a soap may have considerable medicinal value.

At the request of Mr. Pearson, of THE INDIA RUBBER WORLD, I prepared a few notes concerning "Possible Rubber Producers in the Temperate Zone." This paper was read at the Third International Rubber Conference, New York, 1912, and published in THE INDIA RUBBER WORLD, June 1, 1913. Under the name "Strobel's Rubber Plant" (named in recognition of the collector), mention is made of a shrub now identified by means of the excellent photographs reproduced in THE RUBBER WORLD as the dwarf rabbit bush.

I am glad that the California Section of the National Council of Defense, through the University of California, has taken hold of the matter. I am again glad to know that the work is being carried out by Professors Hall and Goodspeed. During the past decade Professor Hall has aided me in identifying and obtaining interesting plants in my search for rubber producers. With the aid of THE INDIA RUBBER WORLD, I am certain that the goal is in sight.

Yours sincerely,

CHARLES P. FOX.

Cleveland, Ohio.

THE RUBBER FACTORY IN SCHOOL TEXTBOOKS.

TO THE EDITOR OF THE INDIA RUBBER WORLD:

DEAR SIR:—It has recently come to my attention that a section of your article on "Vocabularies" ancient india rubber, which appeared in volume IV of the Young Folks' Library, published by Hall & Locke Co., Boston, has been given a new title, "In the Factory," and incorporated in the Riverside Seventh Reader, published by the Houghton Mifflin Co., Boston.

Rarely is the work of a writer for the technical or trade press selected as literature and accorded a place in book form beside selections from such gifted pens as those of Longfellow, Bryant, Stevenson, Holmes, Thomas Bailey Aldrich, and John Burroughs. May I not congratulate you on this well-merited distinction?

Sincerely yours,

MADISON R. PHILLIPS.

Boston, Massachusetts.

CANADIAN SOLDIER BECOMES RUBBER COMPOUNDER.

TO THE EDITOR OF THE INDIA RUBBER WORLD:

DEAR SIR:—At present I am employed in the chemical department of a rubber factory in this city and am desirous of becoming thoroughly familiar with general compounding for the rubber trade. If there are any books I can procure on compounding I would be much obliged for the names of them. I might say I have had only a few months at the compounding end of the game, having taken it up on being discharged from the Canadian Army as unfit for further service through wounds. I spent twenty-two months in France, and had the pleasure of teaching some of the boys from the U. S. A. the system as used in the Allied Armies. I was a first lieutenant.

Very truly yours,

C. H. STANYON.

Toronto, Canada.

AUTOMOBILE SHOWS CANCELED.

The national automobile shows to have been held in New York and Chicago have been canceled at the request of the War Industries Board and promoters throughout the country have been asked to abandon all plans for local shows of automobiles, trucks, or accessories.

Become a stockholder in the United States—buy War Savings Stamps.

New Goods and Specialties.

THE "TRI-CO" RAIN RUBBER.

A RUBBER or wiper for wind shields, which attaches to the lower edge of the upper glass, cleans both upper and lower portions of the shield simultaneously. It slides across easily by means of a slot provided for the purpose and may be operated by either the driver or passenger in the automobile.



The Umbrella for Windshields

Each arm of the rubber is provided with multiple gum rubber cleaning surfaces which remove rain or snow and at the same time dry the glass on the principle of the squeegee. This is usually the case in windshield cleaners of this type, and for this reason many of these devices have a similar appearance at first glance.

Some point of diversity, however, entitles their inventors to a patent. (Tri-Continental Corp., Sidway Building, Buffalo, N. Y.)

FAIRFIELD RUG ANCHOR.

You may now safely decorate your highly polished hard-wood floors with the most slippery of antique rugs you can afford, yet with the long-wished-for assurance that you may step on them as nonchalantly as you please without danger. A new fabric called rug anchor, made of rubber-faced whipcord, is laid under the rug with the rubber-coated surface forming a non-skid one against the floor.



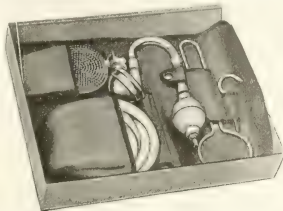
Du Pont Fabrikoid Co., Inc., successor to Fairfield Rubber Co., Wilmington, Delaware.

A NOVEL HEEL DESIGN.

A new design for a rubber heel shows a conventionalized pattern with notched-in outer edge and the center portion form by a star having seven points of uneven length and the center cut out. This design has recently been patented. (Gustav A. Huben, 2219 Fremont street, Chicago, Illinois.)

SYPHON BATH OUTFIT FOR THE SOLDIER.

In addition to the rubber boots and coats, hand basins and drinking cups, inflatable pillows and mattresses, etc., now comes the portable syphon-bath outfit for the soldier, with the same convenient fittings to which he was accustomed at home, but compactly arranged in a folding khaki case provided with pockets and straps to hold all the different parts securely in small space. The case is sold packed in a neat carton. (Knickerbocker Manufacturing Co., 206-216 West Sigel street, Chicago, Illinois.)



AN EAR STOPPLE FOR SWIMMERS.

A device to protect the ears of swimmers and bathers, divers, and marine divers from being flooded with water or irritated by particles of sand or other foreign substances, is shown in the accompanying illustrations. The smaller one illustrates the ear stopple itself and the larger gives an idea of how the stopple

looks in position in the ear. These ear stopples have no opening, yet permit the wearer to hear almost normally.

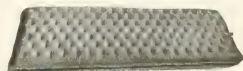
For other purposes, however, such as gunning and hunting, cycle racing, riveting and boiler-making, etc., another style called the perforated ear stopple, is recommended. Both designs are made of soft, flesh-colored rubber and are almost unnoticeable when in position. They are easily removed from the ears when desired, and weigh very little. (Dr. Frank Ear Stopple Co., 325 Locust street, Toledo, Ohio.)



FOR THE SOLDIER'S PROTECTION AND COMFORT.



For the protection of the soldier against rain and storm there are many types of garments and one of the practical ones is the military cape. That in the accompanying illustration is made in four styles of double-texture tan or olive-drab fabric in different qualities and weights, coated with tan, olive-drab, or black rubber, with sewed, cemented, and strapped seams. One style is reversible, and all are provided with large arm slits and ball-and-socket fasteners. These capes are 52 inches long and are

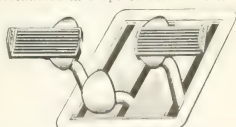


made to fit small, medium, and large-sized men.

The mattress above, known as the "Handy Camp Mattress," is covered with khaki cloth and is fitted with the "staytite" valve. It is strong, flexible, and easily adjusted according to the degree to which it is inflated. When not in use, the mattress can be rolled up into a small, compact bundle which is easily carried. (Hodgman Rubber Co., Tuckahoe, New York.)

UTILITY SURE-GRIP PEDALS.

A new style of pedal for use on Ford cars is called the "Utility Sure-Grip." It is faced with a good quality of rubber and is wide enough so that the foot does not readily slip from position. These pedals are also differentiated in shape so that there is a marked contrast between that for the reverse and those for the clutch and brake on either side. A nut holds each pedal in place. The material used is pressed steel with a non-rusting metal edge around the rubber facing. (The Hill Pump Valve Co., Archer avenue at Canal street, Chicago, Illinois.)



THE "FITSAL" FAUCET CONNECTOR.

A faucet connector which is provided internally with three grooves of varying diameter is known as the "Fitsal" because it fits faucets of one-quarter, five-eighths, or three-quarters-inch diameter (equivalent to three-eighths, one-half, or five-eighths-inch thread), as well as three-eighths and one-half-inch diameter standard tubing. This convenient connector is made of high-grade para rubber and is easily adjusted, as it needs no stretching. It is especially suited to use with bath sprays and portable showers. A chain is provided for looping over the faucet to guard against the attachment being blown off by water pressure. (The Bunker Hill Rubber Works, Bunker Hill, Illinois.)



BULL'S EYE "RUB-R-SEALED" PATCH.

A patented patch for mending inner tubes is made of "Rub-R-Sealed" elastic fabric composed of cotton elastic webbing rubber-faced on both sides, one being fine Para rubber and the other, inner-tube stock. The unvulcanized

patches are cloth-wrapped on and around a metal core and the cloth-wound ones are open-steam-vulcanized, producing a curved shape. (Bull's Eye Rubber Co., Inc., 131 Harris avenue, Long Island City, New York.)

THE "DREADNAUGHT" SAFETY SUIT.

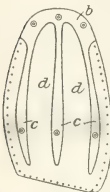
The practice of conservation affects greatly differing lines of products, one of the latest of which is the safety suit of rubberized fabric. Our issue of November 1, 1915, described the Youngren life-saving suit, later called the "Ever-Warm." This included a large rubber-covered metal framework at the top, which was heavy and clumsy. The conservation of metal by the Government, to cite only one reason, led to the invention of an improved life-saving suit along similar lines, called the "Dreadnaught." The new suit does away with the metal frame and mittened hands. It is provided with an opening at the neck, by which it is put on, which closes by being folded over on itself watertightly and held in place with buckled straps. The sleeves end in elastic-fabric wrists which make them water-tight and leave the hands of the wearer free to operate wireless or do anything else desired. The feet are weighted to maintain the wearer in an upright position and the suit obtains its buoyancy from the kapok with which it is padded. An outside pocket holds food, etc. (Life-Preserver Suit Co., 1385 Broadway, New York City.)



NEW ENGLISH SOLE.

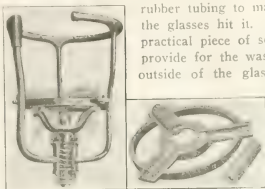
Owing to the scarcity of leather in England, a great variety of rubber or fiber-and-rubber soles have been produced. One of the latest is composed of a canvas backing having secured to it a rubber tip *b* and undercut or grooved ribs *c*, with a filling *d* of rubber substitute secured in place by vulcanization. The drawing shows how this sole-protector, which it really is, looks.

It is said to be popular, as it does not slip, and it is fairly cheap. This sole is patented in The United Kingdom. (F. J. Wood, 3 Raws street, Bank Parade, Burnley, Lancashire, England.)



THE "NO-THUMP" TUMBLER WASHER.

A patented device in general use at soda fountains which prevents the nicking and breaking of soda glasses during the washing process and which at the same time provides for adequate cleansing and sterilizing, is embodied in the "No-Trump" tumbler washer shown herewith. The bottom part of metal is provided with three pieces of rubber tubing which are replaceable and are held in position by means of little projections from the framework, so that no metal runs through the rubber tubing to make it unyielding when the glasses hit it. Other features of this practical piece of soda-fountain equipment provide for the washing of the inside and outside of the glass simultaneously with either hot or cold water or water to which a sterilizer has been added. The hand of the person holding the glass touches the bottom only, the glass



being bottom upward. (L. L. Rowe, 74 Portland street, Boston, Massachusetts.)

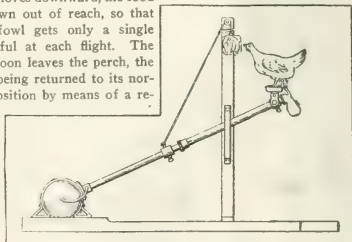
SUBMARINE "R 2."

Among the latest war toys is a submarine which can be made to run submerged or on the surface of the water, straight ahead, or in circles. It will also rise, rise to the surface, and simultaneously shoot a projectile. All this is accomplished by adjustment of the vanes and rudders. This submarine is fifteen inches long. The hull is of wood, painted battleship-gray, and the operating parts are of brass, galvanized steel, and rubber. (The Wilkins Toy Co., Keene, New Hampshire.)



FOWL-DISINFECTING AND EXERCISING APPARATUS.

A novel use for the rubber bulb has been found in an ingenious device, not without its amusing features, for automatically spraying fowls with powdered or liquid disinfectant. When a fowl leaps upon the perch of the apparatus to reach the cabbage suspended by a cord over a pulley on the support above, the weight of the fowl moves the inclined hollow lever downward, compressing a large rubber bulb at the bottom with sufficient power to blow air through the lever and force the disinfectant from the reservoir of the nozzle onto the fowl, as indicated. As the lever moves downward, the food is drawn out of reach, so that each fowl gets only a single mouthful at each flight. The fowl soon leaves the perch, the lever being returned to its normal position by means of a re-



silient spring. Many fowls are thus induced to take exercise and submit to disinfection in their attempts to get the food. (David B. Bird, 7351 Coles avenue, Chicago, Illinois.)

News of the American Rubber Industry.

PENNSYLVANIA RUBBER CO. ANNUAL CONFERENCE.

THE annual conference of sales directors and branch managers of the Pennsylvania Rubber Co., Jeanette, Pennsylvania, was held at the factory of the company from September 18 to 21, the business sessions taking place, however, at the Wayfarers Club—the Pennsylvania Rubber Company Club, next to the factory. The meetings were conducted by H. W. DuPuy, president, and Seneca G. Lewis, general manager, while messages were read from the vice-president, Major C. M. DuPuy, and other members of the company now serving the Government. The artistic little booklet giving the program had as a center-spread a miniature service flag printed in the proper colors, bearing six stars, and under each appeared the name of the man it represented.

THE CUTLER-HAMMER COMPANY IN WASHINGTON.

The Cutler-Hammer Manufacturing Co., Milwaukee, Wisconsin, manufacturing electric-controlling devices and similar apparatus, opened on September 3, 1918, a branch office in the Union Trust Building, 15th and H streets, N. W., Washington, District of Columbia, in charge of H. W. Knowles and C. W. Yerger, engineers who are quite familiar with the company's products. This office will be operated entirely for the purpose of serving the Government and others who require information about the company's goods, orders, contracts, etc.

ASHLEY PLANT SUFFERS FIRE LOSS.

On the morning of September 26 the plant of T. C. Ashley & Co., manufacturers of chemicals and rubber substitutes, in the Brighton district of this city, was almost entirely destroyed by fire, with a loss variously estimated from \$15,000 to \$20,000.

It may be remembered that T. C. Ashley & Co.'s plant at South Boston was burned a year ago, and the firm moved from that location to Brighton.

GOODRICH NOTES.

The B. F. Goodrich Co., Akron, Ohio, is calling for 1,000 new women war workers in its gas-mask and balloon department. It assures good wages, daylight shifts, and wholesome factory conditions.

The list of former employees of The B. F. Goodrich Co. now in service numbers 3,356.

"The Goodrich Circle" printed in its September number a notice to employees in four languages besides English, advising American and foreign employees alike how to conduct themselves at work, urging them to guard against arguments, fire, waste, excessive indulgence in alcoholic drinks, and laziness, as well as the showing of consideration to foreigners—all in the interest of maximum production of what the country needs.

The B. F. Goodrich Co. started on September 9 a special class in citizenship, under the direct supervision of Dr. Oscar Junek. Foreign-born employees previously classed as enemy aliens, but who had taken out their first papers at least two years prior to the declaration of war on Germany by the United States were declared eligible for membership and to apply for final papers.

Following its policy of re-employing soldiers who return disabled by the war, The B. F. Goodrich Co. now has back in its tire-finishing department Jean Joseph Roignant, who has a limp, a Médaille Militaire, and a Croix de Guerre. He pays a high tribute to Americans in the war—"They fight like the French," he says, "to the death, and what they take they hold."

DIVIDENDS.

The American Chicco Co., New York City, declared its regular quarterly dividend of one and one-half per cent on its preferred stock, payable October 1 on stock of record September 20, 1918.

The Apsley Rubber Co., Hudson, Massachusetts, has declared its semi-annual dividend of three and one-half per cent on its common stock, payable October 1 to stock of record September 30, 1918.

The Canadian General Electric Co., Limited, Toronto, Ontario, Canada, has declared its regular quarterly dividend of two per cent on its common stock, payable October 1 to stock of record September 14, 1918.

E. I. du Pont de Nemours & Co., Wilmington, Delaware, declared the regular quarterly dividend of four and one-half per cent on the common stock, payable September 16 to stock of record August 31; also the regular quarterly dividend of one and one-half per cent on the debenture stock, payable October 25 to stock of record October 10, 1918.

The Hawkeye Tire and Rubber Co., Des Moines, Iowa, declared on August 1, the semi-annual dividend on its preferred stock and on August 19, a dividend of six per cent on its common stock, payable October 15, 1918.

The Kelly-Springfield Tire Co., New York City, has declared its quarterly dividend of \$1.50 per share on its six per cent preferred stock, payable October 1 to stock of record September 16, 1918.

The Keystone Tire and Rubber Co., New York City, has declared its quarterly dividend of two per cent and an additional one-third of one per cent on its preferred stock and its regular quarterly dividend of three per cent on its common stock, payable October 1 to stock of record September 20, 1918.

The Portage Rubber Co., Barberton, Ohio, has declared its regular quarterly dividends of three per cent and one and three-quarters per cent, respectively, on its common and preferred stock, the former payable November 15 on stock of record November 5, 1918, and the latter payable January 1, 1919, on stock of record December 20, 1918.

The Republic Rubber Co., Youngstown, Ohio, declared its quarterly dividend of one and three-quarters per cent on its preferred stock, payable September 1 to stock of record August 20, 1918.

The Sewell Cushion Wheel Co., Detroit, Michigan, recently declared a seven per cent cash dividend on both common and preferred stock.

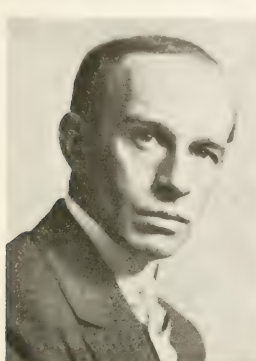
TILLINGHAST COMPANY INCORPORATES.

The business of the late B. C. Tillinghast at 236 Market street, Philadelphia, Pennsylvania, has been incorporated as the B. C. Tillinghast Rubber Co., Inc., with capital of \$75,000 and the following officers: A. W. Tillinghast, president; J. H. Carr, vice-president and general manager; F. F. Crippen, secretary and treasurer. Besides these, the incorporators include Mrs. L. W. Tillinghast, James H. Beith, and Charles Hess, Jr.

The company was incorporated in accordance with the wish of Mr. B. C. Tillinghast, as expressed in his will, and the incorporators include his widow and son and the employees of the concern, of whom the latter have been in service for periods ranging from 22 to 38 years. These are to have the privilege of purchasing stock in the new company. Messrs. Carr, Beith, and Hess will continue to travel for the concern, in addition to their other duties. The company manufactures all kinds of rubber goods, including "Imperial" tires and tubes, clothing and footwear, mechanical rubber goods, and rubber toys.

CHARLES A. RICE.

THREE years ago the city of Youngstown, Ohio, suffered from a flood which put the municipal water supply service out of commission, the needs of the city for both fire protection and general use being



CHARLES A. RICE.

supplied, in the emergency, by connecting the independent system of The Republic Rubber Co. with the city water mains until the subsidence of the flood allowed the pumping station to resume operations.

The history of this water supply is interesting. Four years ago The Republic Rubber Co. found it necessary to secure an independent water supply.

Sufficient pressure and volume were available, but the water was too warm and its mineral action was destructive to boilers, pumps, etc.

The problem was solved by Charles A. Rice, who was then, as now, in charge of the mechanical and electrical equipment of the plant. Two miles from the factory, in the hills, was an abandoned coal mine, at the bottom of which was a lake of clear, cold water. Mr. Rice devised a system of syphonage and pumping by which the water, brought to the surface, forms a brook for nearly half a mile, and then enters a 10-inch pipe, through which, by gravity, it supplies the factory constantly with pure spring water.

During his 15 years with the company, Mr. Rice has made many other important mechanical improvements at the plant, including the equipment of individual motor drives in the calender room, the installation of low-pressure turbines superseding high-pressure reciprocating engines, and the addition of coal and ash-handling equipments, centrifugal pumping machinery and other up-to-date improvements.

Mr. Rice was born in Deerfield, Ohio, in 1875, and supplemented a common-school education by a course in electrical engineering. In 1899 he became engineer in a flour mill, and two years later for a short time was in the electrical department of the Carnegie Steel Co. at the Ohio works; thence going to The Republic Rubber Co. as assistant electrician, becoming chief electrician in 1906, and in 1912 being given full charge of all mechanical and electrical equipment.

He is a member of the American Institute of Electrical Engineers, and of all the Masonic bodies, up to and including the thirty-second degree. His home is at Youngstown, Ohio.

NEW OFFICERS OF BOONE TIRE & RUBBER CO.

The Boone Tire & Rubber Co., Chippewa Falls, Wisconsin, at its annual meeting elected the following officers and directors for the ensuing year: I. V. Maclean, president; F. W. Edgell, vice-president; Holmes Ives, secretary; and J. M. Andrejeski, treasurer; directors—all the above and J. C. Clink, C. B. Culver, Charles F. Oashgar, W. W. Shong, and W. J. Fulton.

PERSONAL MENTION.

James K. Beach has been appointed supervisor of the Texas territory of the Ajax Rubber Co., Inc., New York City, and will have his headquarters at Dallas. He was previously the company's California supervisor, with headquarters in San Francisco. He succeeds H. C. Burnett who has entered government service.

J. B. Bleiler has been appointed special representative of the truck tire division of The Republic Rubber Corp., Youngstown, Ohio, with headquarters at 1745 Euclid avenue, Cleveland, Ohio.

George M. Hoffman holds a record of 15 years' service as manager for The Republic Rubber Co., Youngstown, Ohio, at its branch at 2020 Locust street, St. Louis, Missouri.

L. N. Bartlett has been appointed assistant manager for The Republic Rubber Co., Youngstown, Ohio, at its branch at St. Louis, Missouri.

H. D. Chipley is manager for the United States Tire Co., New York City, at its branch at 1311 East Main street, Richmond, Virginia, to which address it has recently removed. This branch is in the Philadelphia district of the company.

Ernest L. Patten, Malden, Massachusetts, has been granted a patent on his sole-cutting machine described in *THE INDIA RUBBER WORLD* of August 1, 1918.

Prescott C. Ritchie has succeeded H. S. Johnson, who recently resigned, as western district representative for the Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pennsylvania, with headquarters at Indianapolis, Indiana. He was formerly in charge of headquarters inquiry work for the same company in its western district and main offices. Previous to that he was connected with the Thomas B. Jeffrey Co., Kenosha, Wisconsin.

William E. Barker, for some years manager of shoe sales of the United States Rubber Co., but who resigned from that position last summer, and later made a tour of inspection of the company's *Hevea* plantations in Sumatra, has been appointed general sales manager of the wire division of the National India Rubber Co., Bristol, Rhode Island, a subsidiary of the United States Rubber Co.

J. R. Hall, president of J. R. Hall & Co. and vice-president of the First National Bank of Flemington, New Jersey, has succeeded G. Frank Gingles, resigned, as secretary of the Dural Rubber Corp. of that town.

H. M. Murdock formerly manager of the branch of the United States Tire Co. at Amarillo, Texas, has succeeded Frank Kathman as manager of the company's branch at 224 North Sixth avenue, Quincy, Illinois.

A. M. Hill has been appointed sales manager of The Fisk Co. of Texas, San Antonio, Texas.

G. H. Carnahan, of the International Rubber Co., West Barrington, Rhode Island, has been appointed vice-president of The Bayer Co., Inc., manufacturer of aniline colors and pharmaceutical products by the Alien Property Custodian, who recently took over The Bayer Co., and will sell its capital stock to American citizens as soon as the books have been audited and the property appraised.

Stuart Webster, formerly treasurer of the Racine Rubber Co., Racine, Wisconsin and vice-president of the Ajax Rubber Co., Inc., has come East from Racine to act as treasurer of the Ajax company in New York City. He succeeds Harold Stimpson, who has resigned to enter government service.

Dr. E. A. Wullenweber has signed a contract for a term of years as chief chemist for The Mid-Continent Tire Manufacturing Co., Wichita, Kansas.

Miss Hazel McCarthy succeeds Miss Frances E. Silbaugh as nurse in charge of the first aid department at The Federal Rubber Co., Cudahy, Wisconsin, Miss Silbaugh being with the Red Cross in France.

TRADE NOTES.

The United States Rubber Co., New York City, announces that the net earnings of the company for the six months ended June 30, 1918, amounted to \$10,242,365.46 after deducting all interest charges and allowing for depreciation, federal taxes, and reserves.

The Pennsylvania Rubber Co., Jeannette, Pennsylvania, at its recent annual meeting elected the following officers: H. W. DuPuy, president (reelected); Charles M. DuPuy, vice-president; Seneca G. Lewis, general manager; and G. W. Shively, secretary.

The Burdick Tire & Rubber Co., 220 South State street, Chicago, Illinois, announces its removal to Noblesville, Indiana, where all mail should be addressed. Plans of this company for the building of a factory and other operations in Noblesville were mentioned in our issue of March 1, 1918.

The Zwebell Brothers Co., Milwaukee, Wisconsin, which has been engaged in the motor car sales and repair business for some years, has recently developed an improved method of dry cure retreading and will begin the manufacture of a mold for re-treading tires. The company has incorporated at \$25,000 for this purpose.

The Neilson Rubber Co., 533 South Ervay street, Dallas, Texas, distributor of "Quaker" tires, is adding a two-story, 35-foot addition to its present building to take care of its increasing business. S. P. Neilson is manager of the company.

The Life Preserver Suit Co., Inc., has removed its offices from 11 to 1358 Broadway. It is now putting on the market a new improved life-saving suit made of rubberized fabric, described on another page of this issue.

The American Mineral Co., Johnson, Vermont, mining and milling talc, has completed installation of motors at its mill and is now operating with hydro-electric power supplied from the village of Morrisville over an eight-mile transmission line built especially for it. It uses approximately 225 horse-power twenty-two hours daily. It plans to extend this equipment to its mines, also.

The Whitestone Tire & Rubber Co., Inc., 1215 Fourth avenue, Seattle, Washington, has undertaken the distribution of Mason tires and tubes for that state. Maurice Kline is president of the concern.

The Motor Equipment Co. of America has changed its name to the Wheel and Rim Works Corp. The office of the corporation is with the United States Corporation Co., 311 South State street, Dover, Delaware.

The Southland Tire & Rubber Co., Fort Worth, Texas, is completing its new factory, which is of fireproof construction, 80 by 300 feet, four stories high. Modern machinery and equipment has been purchased and most of it delivered ready for installation. In the meantime the company is turning out its product in another plant on its own cores, molds, etc., under the supervision of its superintendent of production. The officers of the company are: William Ginnuth, president; J. C. Vernor, vice-president; and C. M. Zeigle, secretary. W. H. Vernor is the fiscal agent of the concern.

The Cleveland Tire & Rubber Co., formerly at 309 North 15th street, Philadelphia, Pennsylvania, has removed to 685 North Broad street and changed its name to the Gillette Tire Co. of Philadelphia. J. W. Paul is general manager.

The Lion Tire & Rubber Corp., Inc., East Union street, La Fayette, Indiana, has appointed as its distributor in parts of the state, the Lion Supply Co., corner of Fifth and Columbia streets.

The Eagle-Picher Lead Co., manufacturer of red lead, litharge, and orange mineral, 208 South La Salle street, Chicago, Illinois, celebrated September 19 as Flag Day, raising service flags at its different plants, showing 650 former employees in service.

The Firestone Tire & Rubber Co., at its August meeting,

adopted a resolution providing for insurance of all workers who have been in the employ of the company for more than thirty days. The amount increases for each year of service up to the fifth year, when the maximum of \$1,000 is reached.

Employees of The Goodyear Tire & Rubber Co. and their friends to the number of 50,000, attended the third annual field meet and family picnic at the company's forty-acre athletic field, Seiberling Park, on Labor Day. Over 500 employees took part in the various contests, and a community sing and dancing followed the athletic events at the end of the day.

The Amazon Rubber Co., Akron, Ohio, has purchased the tire accessory business of the O'Neil Tire & Rubber Co., including the exclusive right to the name "O'Neil," the good-will of the trade, and all unfilled orders on hand. It will put out reliners, wing blowout patches, lace-on boots, cementless patches, etc., under the name "O'Neil Pioneer Accessories."

TAUNTON RUBBER CO. ELECTS OFFICERS.

The Taunton Rubber Co., Taunton, Massachusetts, at a stockholders' meeting held September 13, 1918, elected the following officers who are also directors: William L. Gifford, president; Joseph L. Gifford, clerk and treasurer; Charles S. McCall, Henry G. Crapo, and Warren Swift. Joseph L. Gifford, who has recently acquired a controlling interest in the company, retains the management of the company which he has had in charge for the last four years and there will be no radical changes in the business affairs of the company.

QUABAUG RUBBER CO. ELECTRIFIES PLANT.

The Quabaug Rubber Co., North Brookfield, Massachusetts, is installing electrical equipment for motive power which is to be supplied by the Central Massachusetts Electric Co. at 22,000 volts, amounting to about 700 electric horse-power. When this installation is completed, steam will be used only for heating purposes and the vulcanization of rubber goods.

TRAVELER TIRE AND RUBBER CO. TO BUILD.

The Traveler Tire and Rubber Co., Traveler Building, Philadelphia, Pennsylvania, has acquired title to three acres of ground on the Pennsylvania & Reading railroad, between Hellertown and Bethlehem, for the purpose of erecting a factory for the manufacture of automobile tires. The officers of the company are as follows: Guy de la Rigaudiere, president; Victor Durand, Jr., first vice-president; G. J. P. Raub, second vice-president; E. E. Pollard, secretary and treasurer. The board of directors includes the above and Latimer R. Baker, Henry L. Renard, Martin H. Fritz, and Joseph Reich.

CANADIAN NOTES.

THE Canadian National Exhibition has opened in Toronto under most favorable conditions. Some twenty-five or thirty new features have been added this year for the comfort and entertainment of exhibitors and visitors.

Gutta Percha & Rubber, Limited, has an exhibit of tires in the Transportation Building, and a showing of miscellaneous products in the Process Building. An immense rubber belt is included, and the display of tennis and other sport shoes and "Tenax" soles is no small feature.

The Canadian Consolidated Rubber Co., Limited, has an extensive exhibit in the Process Building. Before a handsome background depicting a rubber plantation, every process of manufacture is shown from crude rubber to the finished products. Rubber soles and heels, sport shoes, and rubbers are featured strongly as well as new things in rubber-soled pumps, slippers, etc.

NEW INCORPORATIONS.

Cooper Rubber Co., July 29 (Tennessee), \$40,000. I. J. Cooper, J. W. Brumbaugh, R. D. Bond, H. H. Brenner and E. Wilkins. Principal office, Knoxville, Tennessee. To buy, sell, manufacture or otherwise deal in automobiles, bicycles, motor trucks, tractors, etc.

Dace Rim Corp., August 30 (New York), \$50,000. E. T. Burney, 3089 Broadway; E. E. Fish, 220 West 107th street; H. B. Wood, 102 West 75th street, all of New York City. To manufacture rims, tires, auto parts, etc.

Dilator Syringe Corp., August 24 (New York), \$50,000. C. Marks, 327 East 66th street; H. Cohen, 1259 College avenue; H. McCormick, 57 West 130th street—all of New York City. To manufacture syringes, etc.

Grand-Gravois Automobile Co., February 13 (Missouri), \$15,000. A. J. Dietrich, 3815 Michigan avenue; T. J. Mueller, 3408 Miami street; E. L. DeWinter, 3618 Bamberger avenue—all of St. Louis, Missouri. Principal office, 3664 Gravois avenue, St. Louis, Missouri. To deal in automobile supplies, solid, pneumatic, and cushion tires, and do automobile and truck repairing.

Great Lakes Rubber Co., April 18 (Wisconsin), \$100,000. D. C. Barbee, C. J. Zaiser and H. O. Wolfe. Principal office, Milwaukee, Wisconsin. To manufacture rubber goods of all descriptions.

Gudgell's Rubber Hub Co., The, August 17 (Illinois), \$140,000. L. Gudgell, L. Paridor and H. Hankins. To manufacture and deal in "Gudgell's Rubber Hub."

Hercules Rubber Co., Ltd., March 11 (Ontario, Canada), \$150,000. J. A. Campbell, A. Brown, H. W. Dawson, J. McMurchy, T. Thaburn. Principal office, Main street, Brampton, Ontario, Canada. To manufacture and deal in all kinds of rubber goods.

Iowa National Rubber Co., August 17 (Delaware), \$50,000. E. E. Erb, E. M. Jauss, M. C. Miller—all of Harrisburg, Pennsylvania. Delaware agent, Delaware Registration Trust Co., 900 Market street, Wilmington, Delaware. To buy, sell and deal in crude or manufactured rubber, gutta percha, etc.

J. & D. Tire Co. of New York, September 6 (New York), \$50,000. F. McAllister, T. G. Patterson, both of 1761 Broadway, W. J. McAllister, 165 Broadway—all of New York City. To manufacture tires, etc.

Krebs Mining Co., June 15 (Delaware), \$100,000. H. J. Krebs, A. S. Krebs, both of Wilmington, H. V. Berg, Newport—all of Delaware. To purchase, lease or otherwise acquire any mines, mining rights, and mineral lands and to develop the same.

Maryland National Rubber Co., August 17 (Delaware), \$50,000. E. E. Erb, E. M. Jauss, M. C. Miller—all of Harrisburg, Pennsylvania. Delaware agent, Delaware Registration Trust Co., 900 Market street, Wilmington, Delaware. To buy, sell, and deal in crude or manufactured rubber, gutta percha, etc.

Morris Tire Machinery Co., The, August 6 (California), \$57,600. E. H. Furman, Grant Road, Mountain View; E. Wengler, 3736 20th street, San Francisco; H. Laughlin, 5028 Webster street, Oakland—all in California. Principal office, Los Angeles, California. To deal in rubber goods.

New York National Rubber Co., August 17 (Delaware), \$50,000. E. E. Erb, E. M. Jauss, M. C. Miller—all of Harrisburg, Pennsylvania. Delaware agent, Delaware Registration Trust Co., 900 Market street, Wilmington, Delaware. To buy, sell, and deal in crude or manufactured rubber, gutta percha, etc.

Ohio National Rubber Co., August 17 (Delaware), \$50,000. E. E. Erb, E. M. Jauss, M. C. Miller—all of Harrisburg, Pennsylvania. Delaware agent, Delaware Registration Trust Co., 900 Market street, Wilmington, Delaware. To buy, sell, and deal in crude or manufactured rubber, gutta percha, etc.

Pan-American Rubber Co. of New Jersey, The, August 23

(New Jersey), \$20,000. F. Christmann, A. F. Bottcher, F. Coelln—all of Paterson, New Jersey. Principal office, 91 Prospect street, Paterson, New Jersey; agent in charge, F. Christmann. To make, purchase, and sell rubber goods and all goods of which rubber is a component part.

Pennsylvania National Rubber Co., September 17 (Delaware), \$50,000. E. E. Erb, E. M. Jauss, M. C. Miller—all of Harrisburg, Pennsylvania. Delaware agent, Delaware Registration Trust Co., 900 Market street, Wilmington, Delaware. To buy, sell and deal in crude or manufactured rubber, gutta percha, etc.

Pyramid Manufacturing Co., August 21 (Maine), \$100,000. M. F. Hearin, R. W. Farris, C. L. Andrews—all of Augusta, Maine. To deal in waterproofing materials and other kinds of merchandise.

Roamer Tire & Rubber Co. of Akron, Inc., The, August 29 (New York), \$40,000. G. E. Rohmer, 726 Ocean avenue, Brooklyn; A. D. Paillot, 157 Queens building, Woodside; W. F. Timme, 593 Riverside Drive, New York City—all in New York. To manufacture and deal in tires and rubber goods.

Rubber Products & Supply Co., August 10 (Kansas), \$10,000. W. G. Barbour, B. A. Helfrick, P. Deam, E. Blake, F. Purnell and F. C. Dymock—all of Wichita, Kansas. Principal office, Wichita, Kansas. To transact a general mercantile, jobbing and manufacturing business in rubber goods, automobile tires, tubes and accessories.

Tillinghast Rubber Co., Inc., B. C., August 23 (Pennsylvania), \$75,000. L. W. Tillinghast, A. W. Tillinghast, J. K. Carr, J. H. Beith, C. Hess, Jr., and R. F. Crippen. Principal office, 236 Market street, Philadelphia, Pennsylvania. To manufacture tires and tubes, rubber clothing and footwear, mechanical rubber goods and toys.

West Virginia National Rubber Co., August 17 (Delaware), \$50,000. E. E. Erb, E. M. Jauss, M. C. Miller—all of Harrisburg, Pennsylvania. Principal office with the Delaware Registration Trust Co., 900 Market street, Wilmington, Delaware. To buy, produce, sell, trade and deal in any and all kinds of crude and manufactured rubber, etc.

Wheel and Rim Works Corp., August 30 (Delaware), \$600,000. S. B. Howard, G. V. Reilly, A. W. Britton—all of 28 Nassau street, New York City. Principal office with the United States Corp. Co., 311 South State street, Dover, Delaware. To manufacture and deal in automatic signal horns, carpet sweepers, aeroplanes, tractors, automobiles, etc.

Zwebell Brothers Co., July 23 (Wisconsin), \$15,000. H. A., A. B. and A. R. Zwebell. Principal office, Milwaukee, Wisconsin. To manufacture a machine to repair automobile tires, known as the Zwebell retreading machine, and molds.

CLAIMS AGAINST BATAVIA AND SIMPLEX RUBBER COS.

A notice to creditors of The Batavia Rubber Co. and The Simplex Rubber Co. of America, Inc., Batavia, New York, which some time ago went into the hands of a receiver, states that in order to be considered, all claimants must file duly verified claims against either or both of these concerns on or before October 7, 1918, with Maxwell H. Bochow, receiver, at the office of his solicitors, Breed, Abbott & Morgan, 32 Liberty street, New York City.

RUBBER CHEMIST WINS PROMOTION.

The recent promotion of Charles P. Flora to the position of state superintendent of the Hood Rubber Co., East Watertown, Massachusetts, is his reward for intensive application along one unbroken line of endeavor for over thirteen years. Mr. Flora began his career with this concern as a chemist in 1905, later being appointed master of refining. In 1912 he became master of reclaiming and has also held the position of chemical engineer of the concern. He is a Yale graduate and enjoys great popularity throughout the Hood organization.

CLARENCE J. WELCH.

BECAUSE of the announcement that Clarence J. Welch, manager of the motor-truck tire department of the United States Tire Co., has been advanced to the position of assistant sales



CLARENCE J. WELCH.

manager, that gentleman is receiving the congratulations of his host of friends in all parts of the country. The promotion is fully earned and deserved, for Mr. Welch has had a practical and commercial experience extending over a decade with the company and its predecessors.

Born in Kalamazoo, Michigan, in 1887, he was educated in the public schools of that city, the Le Fevre Institute, and the University of Notre Dame, Indiana, graduat-

ing from the latter in 1905. After some time with a regalia manufacturing concern, and four months in a piano factory, he went to Detroit as salesman for the Cable Piano Co. This, however, not suiting him, he entered the employ of Morgan & Wright, September 1, 1907, and spent a year in the factory, another in the sales department, learning the tire business from the bottom. In 1909 he was made assistant manager of the bicycle and motorcycle departments of that company, and when the concern was made a part of the United States Tire Co. in 1911, he went to Chicago, Illinois, as assistant to J. C. Weston, who, as central district manager for the new company, was in charge of its business in twenty-two central states. At that time Mr. Welch had charge of the bicycle, motorcycle and truck tire sales. He made such phenomenal sales records in these departments that in 1913 he was transferred to the general offices of the company in New York City and given general charge of the motor-truck tire department. His success in that field has led to his recent promotion. His new position opens up a much wider field of responsibility and opportunity.

Mr. Welch is a member of the Society of Automotive Engineers, The Motor Truck Club of America, and the Wykagyl Country Club of New Rochelle, New York, in which suburb of New York City he has his residence.

STERLING TIRE CORP. BRANCH MANAGERS.

The Sterling Tire Corp., Rutherford, New Jersey, announces the following appointments: W. C. Clark, formerly connected with the company's branch at Rochester, New York, now manager at Bridgeport, Connecticut, succeeding W. M. Cowles who has resigned because of poor health; George Buckridge now manager of the company's sales branch at Albany, New York; Howard Lacey, formerly detailed on special sales work in New York, now manager of the company's branch at Hartford, Connecticut; J. P. Stiles, formerly a salesman at the company's branch at Newark, New Jersey, now manager of its branch at Providence, Rhode Island.

PURCHASING AGENTS ADOPT A STANDARD CATALOG SIZE.

The National Association of Purchasing Agents, acting on the consensus of opinion of twenty-four associations, representing various industries, professions and trades, urges that all catalogs meant for purchasing agents be made 7½ by 10½ inches, or, in the case of small booklets of the half sizes, if saddle stitched, one-half this size so that they will open up to the full size for filing.

Not only will this standardization facilitate buying, because catalogs can be filed according to classes of material rather than size, but it is claimed that it will result in saving millions of dollars annually in the printing business and will release for other work 30,000 employees formerly employed on hand-fed presses.

DRIVER-HARRIS IN CANADA.

The Driver-Harris Co., Harrison, New Jersey, has incorporated in Canada as the Canadian Driver-Harris Co., Limited, at Walkerville, Ontario, the date of incorporation being June 6, 1918. At present it will manufacture nichrome castings and does not contemplate the making of rubber-insulated wire. The officers are: Frank L. Driver, president; Arlington Benschel, first vice-president; Leon O. Hart, second vice-president; Leroy Edwards, secretary and treasurer.

RUBBER MANUFACTURERS RED CROSS AUXILIARY.

Managers of the various rubber companies represented in Fargo, North Dakota, by wholesale factory branches recently had a dinner at the Gardner for the purpose of discussing the formation of an auxiliary to the local Red Cross, to be known as the Rubber Manufacturers Red Cross Auxiliary, and composed of the various branch employees numbering about fifty. Arrangements for such an organization are now being completed. Those present at the dinner were: C. J. Burns, Ajax Rubber Co., Inc.; A. T. Severs, Firestone Tire & Rubber Co.; R. M. Hakins, her Co.; C. A. Moshier, The Goodyear Tire & Rubber Co.; J. P. The Fisk Rubber Co.; C. A. Williams, The B. F. Goodrich Rubber Chambers, Marshall-Racine Rubber Co.; and D. B. Murdock, United States Tire Co.

RUBBER COMPANY TRUCKS HELPING THE RAILROADS.

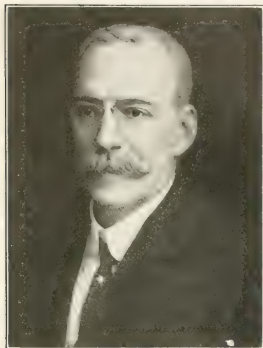
Completion of a census by The B. F. Goodrich Co., Akron, Ohio, of the volume of motor truck transport on the Cleveland-Akron highway discloses the dramatic story that the relief to the railroad lines between these important centers is 1170 per cent over nine months previous. In car figures, this means that this 40-mile highway is giving 885 freight cars a week to other communities for more vital tonnage. If only an average of 600 car-releases a week is maintained for twelve months, this busy roadway will have saved for the nation 31,200 freight cars.

These statistics tell more vividly than all phrases how potential is the aid being given the hard-pressed railroad systems of the country. They reveal likewise the tremendous strides made in a transportation industry that may in time rival the railroads. Indeed, the Goodrich company is taking a leading part in the formulation of plans whereby the region of which Cleveland forms the center, extending to Toledo on one hand and Buffalo on the other, will be traversed by motor trucks, making it possible to move thousands of tons of short-haul freight which has heretofore been handled by the railroads. Return-load bureaus are to be formed with the idea that every machine will be loaded to capacity both coming and going. There seems to be no reason why all the comparatively short-haul and less-than-carload shipments throughout the country cannot be entirely taken off the railroads if similar arrangements are effected by progressive firms in various industrial sections.

The Obituary Record.

A PIONEER MANUFACTURER.

FRANK CAZENOVE JONES, who died on September 20, 1918, at his home, 80 Park avenue, New York, was for many years connected with rubber manufacture in an important way. He was born in Washington, District of Columbia, in



FRANK CAZENOVE JONES

1857. Graduating from Georgetown University, he took an engineering course in Steven's Institute. After a year of travel he became interested in the rubber business, and associated himself with the New York Belting and Packing Company, and in time became general superintendent. In 1893 he, with Arthur F. Townsend and George Woffenden formed the Manhattan Rubber Manufacturing Company, with

Mr. Jones, president; Mr. Townsend, secretary and treasurer, and Mr. Woffenden, superintendent. Ten years later, suffering from nervous breakdown, Mr. Jones disposed of his holdings, resigned as president of the Manhattan, and went away for a rest. His health restored, he again took up business. He became active in the Okonite company, of which he was chairman of the board of directors. He was also interested in certain rubber planting prospects, was president of Cera Company and a director in the New York Lubricating Oil Company.

Mr. Jones was a lineal descendant of John Paul Jones, of Revolutionary fame. He was also a grandson of Commodore Jacob Jones, U. S. N., who was captured with the frigate *Philadelphia* in the war with Algiers, was held a prisoner there for twenty months, and afterward commanded the *Wasp*, which defeated the British sloop *Frolic* in the War of 1812.

Mr. Jones was one of the first to appreciate the value of engineering and of chemistry in rubber manufacture. A man of great energy and enthusiasm, his frail body could not keep pace with his eager spirit. He leaves many warm friends, and no enemies.

PRESIDENT OF BRECK RUBBER CO.

James H. Breck, president and treasurer of the Breck Rubber Co., Springfield, Massachusetts, passed away at his home in Longmeadow on August 2, 1918, at the age of 64. He had been in the rubber business for 38 years and was well known in Springfield business circles.

Mr. Breck was born in Wethersfield, Vermont, but lived the greater part of his life in Springfield. He was married January 15, 1899, and is survived by his widow; a son, Robert Gifford; two brothers, Charles G. and Martin D., both of Springfield; and two sisters, Mrs. C. S. Kempton, of Longmeadow, and Mrs. Clarence Paddock, of Lynn.

Mr. Breck was fond of outdoor sports and fishing and was a member of and an active worker in the local lodge of the Ancient Order of United Workmen.

A WELL-KNOWN BELTING SALESMAN.

James F. Holt, for more than a quarter-century salesman for the Boston Belting Corp., died at the residence of his sister at Spofford, New Hampshire, September 4, aged 70 years.

Mr. Holt was born in Spofford, then known as Chesterfield Factory, June 13, 1847, and was educated in the public schools, also taking a course at Comer's Commercial College in Boston, Massachusetts. He enlisted and served the last year of the Civil War in the 18th New Hampshire Regiment, taking part in several important engagements, and was at one time a dispatch carrier. After being mustered out, he learned the machinist's trade at Spofford, later working on shoe machinery at Lynn, Massachusetts. His first connection with the rubber business was as traveling salesman for the Hall Rubber Co., Boston, covering New England, New York and some western states. Later he joined the sales force of the Revere Rubber Co., and for the last 26 years had been associated with the Boston Belting Corp., covering the paper-mill trade in New England, as well as some other sections of this country and Canada. His practical mechanical experience proved of great value in introducing rubber-covered rolls in paper mills, and he was successful in devising and adapting other kinds of mechanical rubber goods for use in the paper industry.

Mr. Holt was twice married. He is survived by a daughter and grandson. He a 32nd degree Mason, an Odd Fellow, and a member of the Ancient Order of United Workmen, Grand Army of the Republic, Maine Quarter Century Association and the Salem Masonic Club.

Mr. Holt was a typical New England product, an old-fashioned, friendly, traveling salesman, a type becoming exceedingly rare. A Yankee of Yankees, he was known from one end to the other of his territory, and held in the highest regard. Always at home, in the office of the big mill owner, or in the country store, he swapped stories, cracked jokes and held his customers by his geniality, fairness, and knowledge of men and of his wares.

During his illness, he received scores of letters from his friends and customers, and he delighted to talk of his friends and his work until within a few days of his death.

A VETERAN RUBBER SALESMAN.

Watkin W. Griffiths died at the home of his brother in Utica, New York, on September 15. He entered the employ of the Hodgman Rubber Co. in 1875 as general salesman, and was identified with the company until his death, although for the last six or seven years he was not active in business on account of ill health. He was a representative of the old order of rubber salesmen of forty or fifty years ago.

A MAN OF LARGE AND VARIED INTERESTS.

Charles Minor Weld, president of the O'Bannon Corp., manufacturer of carriage cloths and coated fabrics, died August 27 at his home in Milton, Massachusetts, as the result of a shock. He had been in poor health for some months.

Mr. Weld was born in Boston on October 2, 1858. He graduated from Harvard University with the class of 1880, after which he entered a business career and in a very short time was identified with numerous corporations, banks and other interests. For many years he was a member of the dry goods commission house of Amory, Browne & Co., Boston.

He became director and was elected president of the O'Bannon Corp. about four years ago, but could give but little of his time to that concern, being on the directorates of twenty or thirty prominent organizations, including insurance, banking, railroad, textile, and public service corporations.

Mr. Weld was a member of the Somerset, Harvard, and Exchange clubs, of Boston, and the Country Club of Brookline, Massachusetts. He is survived by his widow, two sons, and three daughters.

A FIRE HOSE SYMPOSIUM.

Such well-known hose experts as W. T. Cole, president, Fabric Fire Hose Co.; E. G. Kimmick, experimental department, The Goodyear Tire & Rubber Co.; C. W. Hardin, manager of mechanical sales, The Republic Rubber Co.; S. A. Coombs, assistant general manager, New York Belting & Packing Co.; J. M. Miller, Empire Rubber & Tire Co.; E. Downs, chief chemist, New Jersey Car Spring and Rubber Co., Inc.; and others reply in a very interesting manner to certain questions in "Fire and Water Engineering." In a letter to our contemporary an inquirer refers to the fact that some cities, in their specifications for 2½-inch double-jacket rubber-lined cotton fire hose, allow not more than two revolutions at 400 pounds pressure per square inch and a maximum increase in external diameter of 1/16 inch. He asks what the significance of exceeding one or more of these requirements would be and whether it would matter if the hose had a cemented or a loose inner tube. The replies point out that undue elongation of the hose means that the jacket is woven with a loose warp, or that the fillers are spread too far apart. Stress is also laid on the necessity of using a middling grade of yarn, as Sea Island cotton or grades approximating it would be too elastic. Various serious evils of elongation are pointed out. For instance, if a fireman is at the top of a ladder with a 500-foot line of hose under a working pressure of 125 to 150 pounds and each 50-foot section stretches only 30 inches, a total of 300 inches, and the water is suddenly shut off, or a length of hose bursts somewhere back in the line, the nozzle will immediately be snapped back 300 inches, which is liable to pull the fireman off the ladder or pull down the whole ladder. Or again, when a fireman gets into a position on a roof where it is difficult to stand, when the water is turned on, if the hose pushes forward, it might push the man off the roof. With regard to twisting, as a double jacket hose is composed of two single jackets, the filling threads must run in opposite directions to each other; then, if the two jackets conform perfectly, there will be little or no twist. The objection to twisting is based on the probability of the couplings being loosened if the twist is in the wrong direction. Besides which, if hose stretches excessively, the stretch will be "taken up" in snakes in the line, the water will not travel straight to the fire, it will be retarded by friction, and the pressure will be reduced. Regarding the difference between a cemented or a loose inner tube, it seems that the adhesion has very little to do with the service of the hose. And yet, if the tube were cemented to the inner jacket for part of the surface, it might reduce the likelihood of a loose section of tubing being crowded to the discharge end of the hose while under pressure.

FIRMS JOIN TO EXPAND FOREIGN TRADE.

By grace of the recently enacted Webb-Pomerene law, permitting American manufacturers to join forces for the purpose of promoting foreign trade, a combination of forty-four important establishments, styled the Allied Industries Corp., with offices at 151 Fifth avenue, New York City, has been formed to introduce American goods abroad and promote trade with the seventy foreign markets of the world now open for immediate and systematic development. Over \$100,000,000 in domestic annual sales is

represented in the merger, of which Alfred I. duPont, of Wilmington, Delaware, is chairman, and which is affiliated with the French-American Constructive Corp.

The Allied Industries Corp. will represent responsible manufacturers and sell their goods under their own trade marks at a selling commission based on the amount of goods sold and shipped, plus a bonus on a guaranteed minimum sale. For the first group of manufacturers there will be no advance selling charges or fee. The corporation is financed to take the initial risk and burden of expense, enabling it to extend credits to responsible foreign buyers when necessary and at the same time securing immediate cash payments for its American clients at a fractional discount.

Representatives will be located in the various foreign markets and permanent expositions will show American products in New York, London, Paris and other trade centers for the benefit of foreign buyers. Negotiations are in progress with 658 firms, and the firms so far allied with the corporation include makers of rubber articles and toys, textile goods, chemicals, etc. It is stated that an important business in rubber products will be done.

RAINCOAT MEN TO GET A BILL OF PARTICULARS.

The raincoat manufacturers indicted under the Sabotage Act have made the first move in their defense, resulting in an order issued by Judge J. C. Hutcheson in the Criminal Branch of the United States Federal Court, directing the Government to furnish the defendants with a bill of particulars concerning the alleged imperfections in the garments supplied by them. The manufacturers contend that the raincoats were made according to specifications and that after acceptance by the Government inspectors their responsibility as manufacturers ceased.

FIRST RAINCOAT FRAUD CASE TRIAL BEGINS.

The trial of the first of the raincoat fraud cases was opened before Judge E. J. Hutcheson in the Criminal Branch of the United States District Court at New York, on September 17. In this first case there are three defendants, Captain Aubrey W. Vaughan, of the Quartermaster General's Office, Felix Gould, a promoter, and David L. Podell, a lawyer. More than a score of men are involved and will be tried separately. Captain Vaughan has pleaded guilty to a charge of bribery and is expected to appear as a witness for the Government. It is alleged, among other things, that the H. Rosenfeld Raincoat Co. was incorporated mainly for the purpose of concealing the true nature of the transactions to be carried out.

INCREASED PRODUCTION OF GILSONITE AND OZOKERITE.

The native bitumen, including gilsonite, elaterite and ozokerite, marketed from mines and quarries in the United States in 1917 was 89,904 short tons, a loss of 17,573 tons, or 18 per cent, compared with 1916. The market value of the output in 1917 was \$735,924, a loss of \$187,357, or 20 per cent, compared with 1916.

The production of gilsonite and ozokerite was increased considerably in 1917, but the gain credited to these varieties was insufficient to offset the loss in the production of elaterite and other products.

MAGNESITE.

Magnesium carbonate and the light and heavy calcined magnesite used in the rubber trade are derived from the mineral magnesite, of which extensive deposits are found in the state of California and Washington. These sources of magnesite render the United States independent of overseas sources and the domestic supply is much more free from lime than Canadian magnesite, which comes from Grenville, Quebec. The United States Geological Survey estimates that the domestic production for the entire year 1918 may be about 225,000 tons as against 316,000 tons in 1917.

Scientific Inspection of Raincoats in Shops Manufacturing on Section Basis.

By H. Thorpe Kessler.

THE solution of every problem in manufacturing depends largely on proper planning.

The careful and systematic inspection of raincoats requires the same "tactics" one would apply to other commodities.

To maintain a standard of quality at a time when production standards are being revised from day to day, and if the added production is to be made with apprentice help, it demands a close and constant adherence to instructions.

Before a new piecework price can be scientifically set, one must make a careful study of both the time element and necessary motions.

When this company made its first deliveries of slickers (now called raincoats) to the United States Government, only one examination was made of the garment. If all the garments were made by competent employes this method properly supervised would be sufficient. However, the majority of garments are being sewed, cemented and finished by workers who but recently have become acquainted with this trade. Final examining alone does not prevent the poorly stitched or cemented seam.

For the reason just outlined, we introduced into our shops sectional inspection with decided success. To make the method clear, we refer to the various inspections as sectional inspection, departmental inspection, and final inspection.

SECTIONAL INSPECTION.

In each division is an inspector whose sole duty is to see that those parts of the garment sewed or cemented in that section are all in accordance with government specifications both as to measurement and quality. Records are kept in each shop which indicate the clock number of employe working on every part of the garment. The inspectors are responsible to the management—not the shop manager or foreman of the section. In case the work of any employe is not up to standard, the inspector is instructed to call the section foreman's attention to the unsatisfactory work. If the work complained of is not remedied at once, the inspector's duty is to report the matter to the shop manager. The poor work is then reported directly to the general manager, providing the shop manager does not improve the work.

DEPARTMENTAL INSPECTION.

In each shop there are a number of departmental inspectors who look over the garment for either poor cementing or unsatisfactory sewing. Each inspector examines the coat only for defects in the department he represents. This means that each garment is handled by two different departmental inspectors.

While this is a duplication of work in handling the garment, it has secured better results and will be continued until the working force is thoroughly competent. A thoroughly competent force would mean that gross rejections should not exceed six per cent.

FINAL INSPECTION.

The final inspection is guided by the following instructions:

EXAMINERS' INSTRUCTIONS.

GOVERNMENT RAINCOAT. (SPECIFICATION No. 1317.)

1. Turn right and left sleeve inside out:
 - a. Bottom $\frac{3}{4}$ inch D. S.—raw edge.
 - b. Strapping top sleeve.
 - c. Cementing under sleeve.
 - d. Reinforcement and hardware.
2. Turn both sleeves right side out.

3. Shoulder tabs:
 - a. Two inches at shoulder seam.
 - b. Tapers to $1\frac{1}{2}$ inches at top.
 - c. Top $\frac{1}{4}$ inch from stand.
4. Collar:
 - a. Top 4 inches wide.
 - b. Cementing; special attention.
 - c. Tabs securely tacked.
 - d. Test buttons.
 - e. Turn top collar—note undercollar stitching.
 - f. Stitching undercollar at corners.
 - g. Test hinges.
5. Yoke:
 - a. $12\frac{1}{2}$ inches deep from bottom stand.
 - b. Bottom $\frac{1}{2}$ inch D. S.—raw edge.
 - c. Stitching at bottom.
6. Eyelets: (4) left.
7. Side seam cementing right.
8. Pocket: Left.
 - a. Opening $7\frac{1}{2}$ inches.
 - b. Inside stitching, $13\frac{3}{4}$ inches by $8\frac{3}{4}$ inches.
 - c. Three rows stitching, $3/16$ inch apart.
 - d. Test tacking top and bottom.
9. Clasp: Right.
10. Bottom:
 - a. Hemmed $\frac{1}{2}$ inch D. S.
 - b. Stitching at corners and across bottom.
11. Left facing:
 - a. Fly, 29 inches long, 4 inches at second take-up.
 - b. Stitching of fly.
 - c. Take-ups securely riveted.
 - d. Bottom of fly tacked.
12. Pocket: right same as No. 8.
13. Eyelets: (4) right.
14. Side seam cementing right.
15. Turn coat inside out.
16. Right facing:
 - a. Compare length.
 - b. Claps and take-ups even.
 - c. Test caps.
 - d. Button even with button-hole, 8 inches from bottom.
17. Strapping:
 - a. Width $1\frac{1}{2}$ inches.
 - b. Shoulder seam.
 - c. Armhole.
 - d. Facing.
 - e. Pocket.
 - f. Ventilation.
 - g. Side seam.
 - Test all strapping.
18. Contractors' stamp—must be distinct.
19. Turn coat—see No. 17.
20. Test caps on take-ups.
21. Put your number under yoke.

There may be some difference of opinion as to the proper method of examining a garment. In connection with our study, we asked a score of examiners to show us their methods of handling a garment. A careful comparison of our notes indicated that no two men handled the coat alike.

Our next step was to conduct a written examination to learn which parts of the garment were overlooked.

For several months, each final inspector has handled the coat in the order outlined in the instructions. Each week all inspectors are called together and a report is read giving the total number of rejects received from the quartermaster during the previous week, the percentage, the reasons for their return, and the number of rejected garments examined by each inspector.

After reading the weekly report, the accumulated totals are read and the standing of each inspector both as to quantity and quality is determined.

A minimum rate is paid all examiners; promotion and increase in pay is entirely determined from their record as shown by rejection reports by inspectors.

After a shipment of rejections is received and the count is verified, the following information is secured: number of coats rejected by reason; number of coats rejected by shops and reason; number of coats rejected by inspectors.

These figures are posted to a report with accumulative totals and percentages.

Each sectional, divisional, and final inspector is shown re-

jected coats which were originally passed by him. In this way each inspector can see his own careless work.

The "display" of rejected coats is held once each week at which time a meeting is called to go over the weekly report of rejects.

The report on rejects is then handed over to the chief inspector whose sole duty is to improve the work in that section of the shop where the largest percentage of rejections has occurred.

RUBBER TRADE INQUIRIES.

THE inquiries that follow have already been answered; nevertheless they are of interest not only in showing the needs of the trade, but because of the possibility that additional information may be furnished by those who read them. The editor is therefore glad to have those interested communicate with him.

(658.) A reader requests the address of a manufacturer of rubber bulbs.

(659.) A subscriber requests the addresses of importers of rubber goods in the United States, Canada, and South America.

(660.) An inquiry has been received for the addresses of manufacturers of the latest machinery for the manufacture of rubber footwear such as overshoes, gaiters, and boots.

(661.) A reader requests information as to where he can purchase transfers for printing on inner tubes.

(662.) A vulcanizing concern requests the addresses of proofers of cloth.

(663.) A subscriber asks for the name of a manufacturer of hose-winding machinery.

(664.) An importing and exporting concern requests the address of a manufacturer of tapping tools for use on *Hevea* trees.

TRADE OPPORTUNITIES FROM CONSULAR REPORTS.

Addresses may be obtained from the Bureau of Foreign and Domestic Commerce or its district or co-operative offices. Request for each should be on a separate sheet, and state number.

(27,381.) A representative of a Dutch firm in the East Indies and Singapore, at present in the United States, desires to get in touch with manufacturers of sulphur, caustic soda, rosin, zinc white, linseed oil.

(27,394.) An agency is desired by a firm in France for rubber shoes.

ATHLETIC MATERIAL FOR MEN AT TRAINING CAMPS.

The War Department Commission on Training Camp Activities announces that athletic material sufficient to supply 1,750 companies, or 125 complete regiments, has been purchased, an appropriation of \$250,000 having been obtained for this purpose.

The supplies include among other items, 3,000 Rugby footballs, 7,000 soccer footballs, 3,500 volley balls, and 1,750 medicine balls.

As part of the commission's campaign to raise funds for the purchase of athletic equipment for the camps, it is announced that with the sum of \$3,600 obtained from the United States National Lawn Tennis Association the commission has purchased and distributed 2,700 balls and many rackets and nets.

NO ENEMY INTEREST IN EBERHARD FABER RUBBER CO.

The business of A. W. Faber, of Newark, New Jersey, that was sold by the Alien Property Custodian on September 17 should not be confused with the Eberhard Faber Rubber Co., Brooklyn, New York, or the Eberhard Faber Pencil Co., Newark, New Jersey, because the records disclose no enemy interest in either of the latter companies or in the partnership of Eberhard Faber, which is the sales organization of the Eberhard Faber companies.

SCRAP RUBBER DIVISION, NATIONAL ASSOCIATION OF WASTE MATERIAL DEALERS.

THE fall quarterly meeting of the National Association of Waste Material Dealers was held at the Hotel Astor, New York City, on Tuesday and Wednesday, September 24 and 25, at which time the Scrap Rubber Division, David Fineberg, chairman, met and discussed matters of interest in a "win the war" spirit of conservation, evident throughout the proceedings. The proposal was discussed to limit bales of waste rubber to a maximum weight of 1,500 pounds as an aid to handling at docks and warehouses where labor is scarce. Some dealers make a practice of putting up unwieldy bales of 2,500 to 3,000 pounds. Mr. Ralph Loewenthal suggested that the question of bale weight ought to be studied experimentally to determine the most suitable weight as regards economy of space, burlap and labor. The meeting, however, took no action.

The Interstate Commerce Commission Classification Committee has held hearings in New York the past summer at which the scrap-rubber dealers were represented in protest against the proposed requirement of tying bundles of scrap automobile tires in three places with steel baling wire to secure fourth-class shipping rates. Secretary Charles M. Haskins of the Scrap Rubber Dealers Section, argued in favor of permitting optional use of one-quarter-inch diameter rope, wrapped twice and tied in three places on the bundles. Photographs were exhibited illustrating the use of both wire and rope ties and report made of a practical test by shipment of sample roped ties which arrived at destination in perfectly secure condition. The "density" of such a bale measuring 34 inches diameter by 18 inches thick is 13¾ pounds per cubic foot occupied. The committee proposed that rope-tied bundles should bear third-class rate, and has taken under advisement the proposed optional use of rope or wire ties at fourth-class rate.

The scrap-rubber dealers welcome the recent appointment of two of their number, Messrs. Ralph M. Loewenthal and Herman Muehlstein, on a joint arbitration committee with the rubber reclaimers for the settlement of disputes arising over questions of acceptance of deliveries, etc.

NEW OFFICERS OF INTERNATIONAL STAMP MANUFACTURERS' ASSOCIATION.

At the annual convention of the International Stamp Manufacturers' Association in Detroit, Michigan, the following officers were elected for the coming year: R. F. Hershey, Pittsburgh, Pennsylvania, president; Charles L. Safford, Chicago, Illinois, first vice-president; Thomas Wright, Cincinnati, Ohio, second vice-president; Bert A. Stewart, Philadelphia, Pennsylvania, third vice-president; E. Q. Cannon, Salt Lake City, Utah, fourth vice-president; A. Woodruff, Auburn, New York, treasurer; F. A. Rees, Chicago, Illinois; secretary; auditors—J. P. Solomon, Detroit, Michigan; Stan. Bevan, Kansas City, Missouri; A. S. Adams, St. Louis, Missouri; directors—William Jenkins, chairman, Pittsburgh, Pennsylvania; George Westbrook, Hartford, Connecticut; G. Fred Hiss, Columbus, Ohio; M. L. Willard, Chicago, Illinois, and B. Cairns, Toronto, Ontario, Canada.

SALE OF A. W. FABER NOT APPROVED.

The plant of A. W. Faber, Newark, New Jersey, maker of stationers' rubber goods, was sold at public auction by the Alien Property Custodian, September 17, for \$145,000, to Theodore Friedeburg, 30 Church street, New York. Weldon Roberts, of the Weldon Roberts Rubber Co., Newark, New Jersey, was the only other bidder. The sale, however, was not approved by the advisory board and the matter was referred to the sales department in Washington, which will decide whether the property will be readvertised or what disposition will be made of it.

THE RUBBER TRADE IN BOSTON.

By Our Regular Correspondent

THE rubber manufacturers of this city and vicinity have been handicapped for a long time by the desertion of many of their workers to other industries. Many employes, male and female, have found that munition factories and other war-work establishments pay larger wages, and as a consequence rubber workers have decreased materially in number. It is anticipated that the new draft will cause an even greater reduction of available rubber workers, unless the men drafted are pronounced essential to the carrying on of the war. Every day more and more women are being taught to do work which hitherto had been considered men's exclusively, and it is but fair to say that in many cases the experiments have proved successful. Just at this writing, however, a very serious additional shortage of help is noted because of the semi-epidemic of "Spanish Influenza" or old-fashioned grip, which is decimating some of the rubber-factory forces. It is hoped, however, that this is but temporary, and that the presence, in most of the factories, of medical advisers, who are instructing the help in preventive measures, will soon overcome this difficulty.

Patriotism runs strong at the plant of The Fisk Rubber Co., at Chicopee Falls, Massachusetts. The working forces have not only contributed their share in supporting the various organiza-



LIBERTY CHORUS REHEARSAL AT THE FISK RUBBER CO. FACTORY.

tions, and in buying Liberty Bonds, but are also ably represented in the rank and file "over there." The knitters and Red Cross workers are busy at the noon hour and after the work-day is over. The war gardens have been well tilled and are now being harvested. The Liberty Chorus is the latest activity planned along the line of the government suggestion of community singing. The organization has a trained leader, and a small portable organ is used, the rehearsals being held at the noon hour, Thursdays for the factory group, and Fridays for the Administration Building group. Occasionally, when the weather is suitable, both groups unite in an open-air rehearsal. The progress made is most satisfactory, and the result will be that in any community sing which may be held in Springfield or Chicopee, the "Fiskers" will do their full share in adding their volume and harmony.

Speaking of war gardens, those of the Boston Rubber Shoe Co. Factory No. 2 at Melrose are yielding well, showing that rubber workers are excellent amateur farmers. There are nearly 200 such plots on land contiguous to the big factory. Each of these is 40 feet square. The land is furnished free, and is plowed, harrowed and fertilized by the company, which also furnished the seeds at cost. The main crop this year is potatoes, although a large quantity of other vegetables was planted. In addition to the gardens of the employes, the company also planted several acres of potatoes, and one acre of corn.

N. Lincoln Greene, of the clothing division of the United States

Rubber Co., is a busy man at all times, but especially so just now, as he is making frequent trips to Washington in his capacity as chairman of the clothing division of the War Service Committee of the Rubber Industry, a committee which includes every manufacturer of rubber clothing in the country, if, as the said committee claims, the term "manufacturer" means a concern which makes its own cements and coats and vulcanizes its own fabrics, making up these into clothing. Those houses which purchase their fabrics already vulcanized, and their cement, according to the same authority, should be termed "makers." The distinction is worth adopting. At the present writing, Mr. Greene is in Washington in conference regarding specifications for the new coats to be made for the Navy. These will be double-faced textile with rubber between; and the coats made complete before vulcanization, which specification will confine the contracts to "manufacturers," none of the "makers" having facilities for this method of production.

The Davidson Rubber Co., in the Charlestown district of this city, finds that the elimination of styles has worked advantageously in its lines of water bottles and fountain syringes. Whereas three years ago more than 40 numbers were represented in these two items, to-day the company is manufacturing but two numbers of each, in two colors, and the result is that in this limited variety the orders aggregate far more than their production of the greater number of styles of the former period. Like all other concerns, the scarcity of help is a problem difficult of solution, but the steadily increased volume of output tends to show that measures taken to meet the difficulty promise success.

The A. S. Brock Rubber Co., manufacturer of hard-rubber specialties, of this city, with a factory in Lynn, is busy on government work, with enough rubber allotted to fill its contracts with the Government, but finds difficulty in obtaining enough to fill its orders from the regular trade. In this emergency it is using some of its machinery, usually employed on hard rubber, in finishing machine parts of metal. Like all other manufacturers, the war industries and the army demands have made inroads in the working force, in addition to which, at present writing, 30 per cent of its employes are away from the factory, because of the prevailing epidemic of influenza.

Mention is made elsewhere in this number of the release of Mr. Kidder, manager of the Boston branch of the United States Tire Co., that he may be enabled to serve under Charles A. Schwab in the Emergency Fleet Corporation. Almost simultaneously with his departure for this service, but in no wise because of it, his assistant, John C. Toomey, who has been connected with this branch for nine years, resigned in order to accept an important position with the L. A. Young Industries, Inc., Detroit, Michigan.

The recent cancellation of Government raincoat contracts because of alleged irregularities of some makers has redounded to the benefit of the United States Rubber Co., large additional orders having been placed, which results in greater activity than ever at the Cambridge and Stoughton factories of that company.

S. P. Sharples, the veteran analytical chemist well known in rubber manufacturing circles, who suffered a light shock last spring and has been away recuperating all summer, is again on deck with the same ambition for work which has characterized him for many years.

Roy Fraser has been appointed manager of the Boston office of the Pennsylvania Rubber Co., Jeannette, Pennsylvania. He was formerly a member of the Roy C. Fraser Co., of Montreal, Quebec, Canada.

Frank Venn has sold all interest in the business and patents of the Venn marker to the Boston Rubber Shoe Co., Malden, Massachusetts, a subsidiary of the United States Rubber Co.

Robert H. Montgomery succeeds William J. McNeill as local manager of The B. F. Goodrich Rubber Co., of Akron, Ohio, in Worcester, Massachusetts. Mr. McNeill entered government service in June.

Farley & MacNeill, 105-107 Federal street, Boston, have been appointed by the Dural Rubber Corp., Flemington, New Jersey, exclusive distributors for that company in Massachusetts and Rhode Island.

THE RUBBER TRADE IN RHODE ISLAND.

By Our Regular Correspondent.

THE ominous clouds caused by labor disturbances, that overshadowed the plants of the United States Rubber Co. at Bristol, Woonsocket, and Millville, for nearly two months were dispelled about the middle of September. After numerous conferences between the employees and the management of each plant concerned, an amicable understanding was finally reached, satisfactory adjustments made, and the operatives returned to their work.

In the meanwhile advantage was taken of the enforced idleness to make numerous repairs, renovations, and improvements necessitated by the unprecedentedly long period of constant operation at capacity speed, so that when the mills resumed they were in better condition than at any time for many months previous.

Improvements and extensions at the plant of the National India Rubber Co. at Bristol include not only additional buildings and equipment at the plant itself, but the establishment of several features of a social and economic character for the comfort and welfare of the employees. In addition to opening a restaurant at the mill, the company has recently purchased a large dwelling house and lot of land at the corner of High and Bourn streets. The house is to be remodeled and used as a day nursery for small children of the employees.

The newly erected brick addition to the plant has been completed and is being occupied and used exclusively for the production of footwear.

The Lynn Rubber Manufacturing Co. has completed the first of the buildings at its new plant at Warren and has begun the manufacture of rubber shoe-heels and soles. The plant is favorably situated in the east part of the town near the yards and station of the New York, New Haven and Hartford railroad. Further mention of the company's plans was made in the issues of THE INDIA RUBBER WORLD of April 1 and May 1, 1918.

Arrangements are well under way at the plant of the Alice Mill, of the Woonsocket Rubber Co., at Woonsocket, for the establishing of a department for the making of rubber boots. This is the first time since the erection of the Woonsocket mill that this move has been contemplated. Up to the present time the entire floor space of the Alice mill has been used for the manufacture of rubber shoes.

Thomas W. Dwyer, who was employed for a number of years at the factory of the National India Rubber Co., has received his commission as a second lieutenant in the Army after completing training at the officers' training school at Camp Lee, Petersburg, Virginia, where he has been since June 29. Previous to going to Camp Lee he was a sergeant at Camp Devens, Ayer, Massachusetts, having been appointed soon after his enrollment in the National Army.

Included in the list of individuals, firms and corporations assessed on valuations of \$50,000 and over in the annual report of the Board of Tax Assessors of Providence, as filed a few days ago with the City Treasurer, are the following identified with the rubber industry: American Multiple Fabric Co., \$94,380; Walter S. Ballou, \$86,840; Joseph Banigan Estate, \$1,045,580; Augustus O. Bourn, \$84,640; Bourn Rubber Co., \$180,300; Samuel P. Colt, \$219,060; Davol Rubber Co., \$500,000; Glendro Elastic Fabric Co., \$177,300; Joslin Manufacturing Co., \$485,080; Mechanical Fabric Co., \$190,200; Revere Rubber Co., \$830,100; United States Rubber Co., \$1,462,600.

Henry C. Wagner, superintendent of the Alice Mill, of the Woonsocket Rubber Co., was operated on at the Woonsocket Hospital, September 6 for gall stones and appendicitis.

Miss Anna C. Doran has resigned her position as school nurse in the public schools of Woonsocket to accept the position of nurse at the Woonsocket Rubber Co., succeeding Miss Essie McDonald, who has entered Red Cross work.

George A. Cragin, for the past two years general sales manager of the National India Rubber Co., Bristol, has resigned on account of ill health and returned to his home at Worcester, Massachusetts.

Amendments to articles of association have been filed at the office of the Secretary of State under the laws of Rhode Island, by the Glenwood Manufacturing Co., represented by Elmer K. Watson, president, and Alice M. Clark, secretary, for the purpose of engaging in the business of manufacturing and selling of textiles, fabrics, felts, rubber goods, and goods from raw materials.

THE RUBBER TRADE IN TRENTON.

By Our Regular Correspondent.

WHILE Trenton rubber manufacturers are 100 per cent patriotic and always willing to help the Government in the winning of the great war, they were surprised when informed that the Federal order restricting the output of tires would be extended to the first of the year. The news also surprised the many workmen who were laid off the first of August, who were of the belief that they would secure their old positions the first of October. Some of the tire-makers are working at other positions while the order is in effect.

The order of the War Industries Board calling for the elimination of many styles of rubber footwear for the duration of the war will not affect Trenton rubber industries. The Essex Rubber Co., Inc., is a big producer of rubber heels and soles, but no order has been received to change the style of the heels and soles now being made.

Rev. Joseph Howell, of Easton, Pennsylvania, who was pastor of the Presbyterian Church at Hamilton Square, New Jersey, has taken a position at the Mercer Rubber Co.'s plant at the latter place. He announces that he will turn his salary over to the Trenton Chapter of the American Red Cross.

John A. Lambert, treasurer and general manager of the Acme Rubber Manufacturing Co., has been appointed a member of the Community Board of the Trenton district and will assist the Federal-State Municipal Employment Bureau in the Municipal building, Trenton.

Joseph K. Lambert, assistant manager of the tire manufacturing department of the Acme Rubber Manufacturing Co., who enlisted in the Navy last June, is now stationed in the

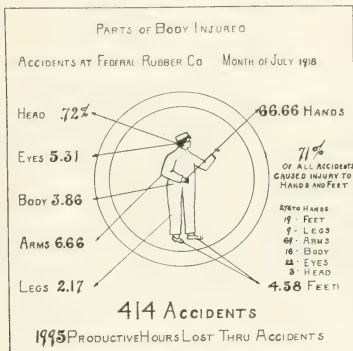
Fourth Naval District, Philadelphia, Pennsylvania. He is the son of John A. Lambert, treasurer and general manager of the Acme company.

* * *

William J. B. Stokes, treasurer of the Thermoid Rubber Co., vice-president and treasurer of the Joseph Stokes Rubber Co., and vice-president of the Home Rubber Co., has been appointed chairman of the new Liberty Loan Committee for Trenton and Mercer County. An office has been opened in the center of the city, and there Mr. Stokes, who recently celebrated his sixtieth birthday anniversary, daily attends to the war-financing campaign, besides keeping in touch with his several rubber interests.

A MONTHLY ACCIDENT CHART.

In a campaign to reduce the number of accidents due for the most part to carelessness, The Federal Rubber Co., Cudahy, Wisconsin, is posting conspicuously in the factory a chart of the accidents for the previous month. The total number of accidents and the number of productive hours lost thereby are



stated, and the percentage for each part of the body is given. All employees are urged to sign a pledge to do and avoid certain simple things which will tend to avoid accidents.

THE KREBS MINING CO. INCORPORATES.

The Krebs Mining Co. has recently filed notice of incorporation in Delaware and will take over the mining interests of The Krebs Pigment & Chemical Co. of Newport, Delaware, manufacturer of Ponolith, in the states of Georgia, and Tennessee, where it has succeeded in locating and acquiring large deposits of ore and has erected washers and ore-dressing plants to prepare this for the manufacture of lithopone.

THE PIONEER ASPHALT CO. MANUFACTURING AGAIN.

The Pioneer Asphalt Co., Lawrenceville, Illinois, subsequent to the fire which destroyed its plant in July, has been endeavoring to dispose of its small existing stock of mineral rubber in an equitable manner and is now manufacturing it again, although in necessarily limited quantity. The company is now under new management and conducting rebuilding operations. When these are completed it hopes to give better material and service than ever before.

NEW YORK BELTING & PACKING CO., EXPANDS.

The New York Belting & Packing Co. is making extensive additions and alterations to its plant at Passaic, New Jersey. Several modern reinforced concrete buildings in course of

construction include two large five-story factories, a power house, and an enlarged office building. Machinery is being installed and direct-connected electric power is provided wherever practicable. A completely equipped machine shop provides facilities for mold making as well as the upkeep and construction of machinery.



PLANT OF THE NEW YORK BELTING & PACKING CO.

A very efficient plan has been developed to coordinate all departments and facilitate the progress through the plant of all goods in the various stages of manufacture. Greatly increased facilities are provided for the manufacture of power and conveyor belting, hose of all kinds, packings and special molded goods.

ALLEN MACHINE CO. EXPANDS.

The Allen Machine Co., Erie, Pennsylvania, manufacturer of hydraulic and rubber mill machinery, has recently acquired the plant and equipment of the Nagle Corliss Engine Works, to which it is moving its offices and adding the equipment of its own old plant. The newly acquired property includes, besides the heating system and various other buildings, a foundry 125 by 250 feet, equipped with traveling cranes and a main machine shop 130 by 332 feet, with a balcony 60 by 250 feet, also fitted with cranes. The Allen Company plans to cast its own rolls for rubber mills and calenders, as well as machining them.

LACQUER FOR SOLID TIRE STEEL RIMS.

The specifications of the United States Army, Ordnance and Quartermaster's Departments require that the steel rims of solid rubber tires shall be painted with a removable waterproof anti-rust material. A varnish-like preparation, known as Blue Removable Lacquer, originally prepared for protecting the bright parts of machinery, has been found to meet perfectly the specified requirements. This coating gives a blue semi-transparent coating and protects the metal from rusting while in transit. It may be removed with kerosene, gasoline, or turpentine, even two years after it is applied.

A GOODRICH DISTINCTION.

For the enlightenment of such of our readers as may be interested, we have secured the following information:

The B. F. Goodrich Co. is a New York corporation, with its principal office at 1780 Broadway, New York City, and its factory at Akron, Ohio, where it manufactures rubber goods of various kinds.

The B. F. Goodrich Rubber Co. is a Michigan corporation which is a subsidiary of The B. F. Goodrich Co., having its principal office at Detroit, Michigan, and its main business office at Akron, Ohio. This company sells the products of The B. F. Goodrich Co.

The Rubber Trade in Great Britain.

By Our Regular Correspondent.

WHEN I had the privilege the other day of seeing a review of American troops—and what big crowds they attracted—I was wondering how many of them came from Akron and other homes of the rubber industry. This inquisitive trait of mine cannot, of course, be satisfied, but at any rate I have been satisfied upon one point, and that is that the American soldier can smile, for I saw one in the act. The solemnity of the American when marching has been much commented on in Britain, though at the same time it can hardly be said that the business on which he or any other soldier is engaged is a laughing matter.

There is nothing new to be said about raw rubber, except that the gloom is deepening on the faces of shareholders who have become accustomed to 50 per cent dividends. Interest has centered a good deal around certain low-grade qualities which are in demand for special purposes. Pontianak, for instance, is difficult to obtain and odd lots of such brands as accra flake have come upon the market to take its place, having been rescued from the oblivion which is their normal due. As so much of the rubber work in progress is of good quality for government purposes the difficulty of getting hold of low-grade rubber has not caused much inconvenience.

So far as the details of the proposed luxury tax have been made public, there is not much to perturb the rubber trade. A mackintosh is not a luxury unless it costs more than \$24.20, which is a much higher price than is usually paid. Of course, even in peace-time one could pay as much for a special article marketed by one or two noted London firms, but these were mainly sold to officers and sportsmen, and as such purchasers will now buy them for service purposes they will not pay the tax. Waterproof clothing generally, as purchased in the shops, has shown a great rise in the last year, owing mainly to the rise in textiles and labor costs, and it may be said generally that the retail price of a year ago is the wholesale price of to-day. Thus the men's popular woven twill mackintosh has gone up from \$5.08 to \$8.47. The cloth in these garments has gone up from 18 cents per single yard to 60 cents.

Lawn tennis balls are in short supply this summer, the price being up 50 per cent. Many dealers are sold out and are unable to replenish their stocks. This is due to shortage of labor in the rubber works for this and other non-essential goods.

RUBBER SUBSTITUTE.

In recent correspondence I referred to an impending famine in substitutes, owing to the failure of supply of vegetable oils. This contretemps, however, seems to have been averted, as rubber manufacturers are still able to get fair supplies. The modern method of neutralizing any free acid by addition of alkalis or alkaline earths, of course increases the weight of substitutes obtainable from a given weight of oil, and it is not surprising that under present conditions the amount of mineral matter thus introduced for this specific purpose shows a tendency to increase. I am referring now to ordinary oil substitute. We have also on the market some special substitutes containing much larger amounts of some inert mineral matter. I fail to see the advantage of buying them, unless the price paid is pro rata to their organic matter content. If the full price of ordinary substitute is paid, it seems to be one of those cases not uncommon in the rubber trade, where the price paid depends largely upon the degree of credulity with which the vaunted virtues of the particular material are received. With regard to the use of oil substitute the general position is abnormal. For one thing, we

have first-quality rubber at 48 cents per pound, and substitute at 18 or 20 cents, so that the inducement to its use is by no means so strong as when rubber was higher and substitute half its present price. Again, the proofing works, which have always been the largest consumers, are now very largely and in some cases entirely engaged on government work in which the use of substitute is barred. There is now little opportunity for the manufacture of the cheap waterproof clothing in which so much substitute commonly masquerades as rubber. A large quantity of substitute has always been used in cheap goods of this sort in preference to mineral matter, because of the suppleness it gives to the goods. As this class of work has never attained the dimensions in America that it has in Britain, and vice versa, as regards the manufacturer of galoshes, we have here an explanation of the greater use of substitute in Britain than in America, as also of the larger use of reclaimed rubber in America than in Britain. With the present stupendous army requirement in America the position is of course materially altered, and as some at least of the American army clothing specifications call for the use of substitute, we may take it that its use will be more general in American practice than it has been in the past. I may remark in conclusion that this paragraph was written before I had read the interesting article on rubber substitute by André Dubosc in the July issue of THE INDIA RUBBER WORLD. At present we hear only of white and brown substitutes, but I can remember the time when white substitute was called Scott's and brown substitute was always called French substitute, as it was only procurable from Lufbury & Chardonniere, whose works were at Chaunay.

BITUMINOUS BODIES.

That versatile journal of America, "Metallurgical and Chemical Engineering," which is rather fond of changing its title, has also had an article on rubber substitutes, by Andrew H. King. I have read with special interest the portion relating to asphaltic materials, which are better understood as regards use with rubber in America than in Europe. During the last year or so, presumably owing to shipping difficulties, there has been difficulty in getting supplies of M R or other American bodies of like nature, and various substitutes have been tried. England has plenty of cheap pitch, but it is not at all popular in the rubber trade, owing to its smell when heated. Moreover, it contains varying proportions of free carbon, which affect its tenacity as a binding material. The scarcity of M R, and also of that popular body petroleum pitch, has led to experiments being made to improve the properties of coal-tar pitch so as to enable it to be used with rubber. These experiments, however, as far as I am familiar with them, have not had any success, mainly, I think, because the new products still retained the familiar smell. Mr. King draws attention to the fact that M R containing Gilsonite combines with sulphur and only dissolves to a limited extent in the ordinary solvents used in rubber analysis, thus making impossible a correct estimate of the rubber per cent. I am not sure that this applies only when Gilsonite is present. Anyhow, the whole subject of the analysis of rubber containing asphaltic bodies is a complicated one, and sympathy is due to the chemist who undertakes such work light-heartedly, unless he has had previous experience. Much the same may be said of the analysis of these asphaltic bodies alone. It is by no means easy to say whether one sample is as good as another, or whether deliveries are up to sample. Too much reliance should not be laid on analytical results in the case of material of this sort, and at

It is useless to expect a reply of value by return mail. The subject of artificial asphalts is attracting much attention at the present time, though not specially in connection with the rubber industry, and we seem to be on the eve of developments likely to prove of considerable commercial importance.

NEW WATERPROOFING WORKS.

The Fabric Rubber Co., Limited, has been registered with a capital of £25,000, the directors being M. F. Frankenburg, S. T. Rowe, and H. Standring. These names will at once suggest to

British readers familiar with the proofing trade that I. Frankenburg & Sons, Limited, is in it. This is the case, the new works being really an offshoot of the well-known Salford firm for the manufacture of goods mainly for government requirements, though the company will continue in business after the war. The premises consist of the new buildings recently erected by the waterproofing firm of Ferguson Spicer and Co. at Fadswaite, near Manchester, the change of ownership having been effected before the latter firm had occupied the new premises.

Miscellaneous Foreign Notes.

FRENCH NOTES.

RUBBER AT THE COLONIAL AGRICULTURAL CONGRESS AT PARIS.
FURTHER details concerning the decisions made at the Rubber Section of the Colonial Agricultural Congress, mention of which was made in a recent issue of THE INDIA RUBBER WORLD, have just been received.

At the second sitting the principal question discussed was that of the creation of a crude rubber market in France. The unanimous opinion was that at the conclusion of hostilities, a market for crude rubber should be established either at Paris or at one of the large ports.

With regard to the creation of a Technical Bureau for Rubber at Marseilles, the Section considered that such an organization was a valuable accessory to a rubber market and further requested that:

- (1) French shipping companies lower their freight rates on imports to correspond with charges of foreign companies;
- (2) The facilities of the large ports be improved in order to decrease costs of transit, maintenance, storage, etc.
- (3) Railroad companies regulate their tariff from the ports so as to favor both the importation of rubber into France and its exportation from the country.

At subsequent sittings, *Hevea* cultivation in Cochin China was the main topic. In a recent issue of the "Annales des Planteurs de Caoutchouc de l'Indochine," the exports from this colony during the year 1917 amounted to 977,879 kilos, or a total of about 1,006 tons, when 28,190 kilos of dry rubber, which could not be shipped for lack of freight, is included.

After some preliminary discussion the Section expressed the desirability of passing liberal laws regarding the alienation of rubber lands in Cochin China and recommended that all possible measures be taken to hasten the issuance of concessions. It further suggested that the utmost should be done, particularly in Indo-China, to complete and develop roads to facilitate the opening up of the immense territories suitable for rubber cultivation. Finally the need for the speedy creation of laboratories for research in the principal colonies, especially in Indo-China, was urged.

At the final sitting, the need was shown for a more favorable fiscal policy with regard to wild rubber in Africa, so as to give local producers a better chance against competitors in other parts of the world.

CONSUMPTION OF RUBBER DURING 1917.

During 1917 French rubber manufacturers consumed a total of 19,731 tons of rubber, comprising 4,432 tons of Pará and other Brazilian grades; 8,549 tons of first latex crêpe, and smoked sheet; 4,501 tons of brown plantation crêpe, and 2,247 tons of Congo rubber and similar sorts. At the same time French colonies produced a total of about 7,000 tons of rubber, including 1,000 tons of plantation rubber from Indo-China; 3,000 tons of French West African sheets and strings; 1,200 tons of French East African Upper Congo black; 700 tons of Congo red; 600 tons of inferior grades and 500 tons of rubber from vines and similar plants.

Of this quantity the local industry used only 3,247 tons, in-

cluding approximately 1,000 tons of Indo-China plantation rubber, so that 3,753 tons of African grades were yet to be placed.

M. Jung, president of the Rubber Syndicate, considers that if the French rubber men would substitute the African rubber for brown crêpe, the whole output of the French colonies could be utilized in France. He advocated that efforts should be made towards this end, both by the manufacturers and producers, the former by employing the rubber, and the latter by improving their product.

IRISH TRADE IN RUBBER GOODS.

Recently published returns of Irish trade during 1916 show that the imports of rubber goods totaled 2,978,752 pounds, value \$3,901,966, against 2,818,928 pounds, value \$3,076,156, in 1915. Gutta percha imports were 32,256 pounds, value \$14,434. There was a decrease in the figures for electric cables, which fell from 2,650,704 pounds, value \$2,275,610 in 1915, to 1,688,176 pounds, value \$1,754,497. Exports of rubber goods are given as having amounted to 1,906,240 pounds, value \$2,497,046. The quantity of electric cables exported was 173,376 pounds, value \$180,187.

ITALIAN ASSOCIATION OF MANUFACTURERS OF RUBBER, CABLES, ELECTRIC CONDUCTORS, ETC.

It is announced that on July 3, 1918, the above association was formed by fourteen Italian firms, which employ about 20,000 operatives and have an output valued at several hundred millions of lire per annum. (A lira = \$0.193, par.)

The object of the association is the development of the rubber and electric-conductor industries in Italy by the study of all questions affecting their expansion in Italy and abroad.

Senator G. B. Pirelli is the president, while the vice-presidents are Comm. Ing. V. Tedeschi, of the S. A. Ing. B. Tedeschi, of Turin, and Ing. Romolo Pola, of the Societa Piedmontese Industria Gomma e Affini, of Moncalieri.

SUCCESS OF DANISH RECLAIMING COMPANY.

The "Berlingske Tidende," published at Copenhagen, Denmark, commenting on the expansion of the Dansk Afvulkaniserings-fabrik A/S, at Kjøge, states that these works employed only 10 men in 1908, but now employ over 200. It seems that this factory is the only one in Denmark going ahead at full capacity day and night, and it is claimed that the plant, due to a special method of devulcanizing, has supplied all the Swedish and Norwegian rubber factories during the war. Six tons of old galoshes have been imported per day.

SOVIETS NATIONALIZE RUSSIAN RUBBER INDUSTRY.

A Russian official dispatch has been received in London, announcing that all important industrial enterprises within the jurisdiction of the Soviet Government have been nationalized by a decree of the Government Council. Among the industries which are now in the hands of the Government are the rubber, metallurgical, textile, electrical, explosive, wood, tobacco, glass, and leather trades.

Municipal undertakings, whether in use or in the course of construction, will come under the provisions of the order.

RUBBER AND RUBBER GOODS FOR SWEDEN.

Under the terms of the new commercial treaty, recently signed by the Allies and Sweden, rubber and rubber goods, foodstuffs, and numerous other materials necessary for Sweden's economic life, are to be exported to Sweden by the Allies in return for 400,000 tons of deadweight shipping, 2,000,000 tons of iron ore, and other Swedish goods, on suitable credit terms during the continuance of the present unfavorable monetary exchange. This pact amounts to a virtual acceptance by Sweden of the Allied blockade, and is expected to diminish greatly the sending of supplies to Germany.

MICANITE MANUFACTURED IN SWEDEN.

John R. Rettig & Co., Stockholm, Sweden, has begun the manufacture of micanite, an electric insulating material consisting of mica cemented together under pressure with an india rubber compound. Before the war Sweden imported all micanite from Germany and England.

DUTCH FIRM CHANGES NAME.

Carel and Jacques Kan, Doetinchem, Netherlands, have taken over the business in rubber goods and allied articles from their father, who traded as Kan & Co. The firm will henceforth be known as Kan & Kan.

RUBBER IN GERMANY.

A correspondent of the "Times Trade Supplement" submits an interesting analysis of advertisements in the principal German newspapers during the first three months of this year.

In general, rubber appears to be seldom advertised, and then only in the form of rings for mineral water bottles. In January some offers of Pará rubber appeared in a dentist's paper, the price being about \$71.75 a pound. In April, an advertiser asked for: "One or two dozen new or second-hand tennis balls. High price given."

RUBBER SHORTAGE AFFECTS GERMAN GAS MASK SUPPLY.

Recent press dispatches from Edwin L. James, with the American Army in France, state that Germany is having trouble in supplying troops with gas masks because of the rubber shortage. Leather as a substitute for rubber in the face mask is unsatisfactory. Indeed, Germany is finding gas warfare a terrible boomerang.

GERMANY TO RECEIVE RUBBER FROM FINLAND.

An Amsterdam dispatch states that under a commercial agreement with Finland, Germany is to receive, among other much-needed materials, old stocks of rubber. Obviously, these stocks must be so small, however, that the German rubber shortage will remain relatively unchanged.

BOLIVIAN RUBBER TRADE CONDITIONS.

The British vice-consul at Riberalta, Bolivia, reports that on account of the depression in the rubber trade, the Beni district is passing through a crisis. It seems that the rubber year which ended March 31, 1918, was very unsatisfactory. Although in normal times prices would have afforded a margin of profit, under present circumstances they resulted in loss. Local quotations ranged from 60 cents to 64 cents per pound for fine rubber, and from 32 cents to 36 cents per pound for cauchó. As a result of this acute situation, the largest firm of exporters of rubber from the Beni district recently received instructions from its London headquarters to withhold the balance of its export until more favorable times return.

During the quarter January-March, 1918, German firms appear to be continuing business under increased difficulties, their greatest handicap being the securing of sufficient supplies of clothing, foodstuffs, etc., for the workers on their rubber estates

Although the possession of quantities of old stock enabled the Germans to maintain themselves for some time, it appears from reports of the larger allied commercial houses here, that the financial position of enemy firms is now precarious.

As to the internal trade of Bolivia, which is receiving more attention because of restricted imports, this is at present controlled by a combination of German firms whose monopoly is practically complete in the territory through which the river Mamoré provides the means of communication.

A freight and passenger service has just been inaugurated, connecting Guajara Mirun, at the terminus of the Madeira-Mamoré railway, with the port of Santa Cruz, in opposition to the transport services provided by two German firms. It is believed that the new enterprise will help to break the German monopoly.

THE NETHERLANDS INDIES RUBBER GOODS FACTORY, BANDONG.

This enterprise was begun in March, 1917, and gradually expanded so that whereas only a few workmen were employed at the outset, their number was 80 at the end of the company's first year. Production increased proportionately, and a reasonable profit is expected for the coming year. A second and third series of shares were issued, amounting to about \$80,000, to finance necessary expansion and a good stock of supplies. The labor consists of natives who have shown themselves apt pupils, but rather prone to absent themselves from the factory as soon as they receive promotion.

THE SOUTH AFRICAN RUBBER MANUFACTURING & TYRE CO., LIMITED, IN NATAL.

The South African Rubber Manufacturing & Tyre Co., Limited, Johannesburg, maker of mechanical rubber goods, has ac-



PRESENT FACTORY OF THE SOUTH AFRICAN RUBBER MANUFACTURING & TYRE CO., LIMITED.

quired a large block of land adjoining the Howick Falls in Natal, together with the power rights, and will erect a rubber factory on the site. The height of the falls is 364 feet and they are at about two hours' railway journey from Durban.

SINGAPORE RUBBER FACTORY TO HAVE AMERICAN MACHINERY.

The Singapore Rubber Works (Nederlandsche Gutta-Percha Maatschappij), 95 Anna Pavlova street, The Hague, Netherlands, is planning to purchase in America, rubber machinery, chemicals, and other supplies. J. P. M. Keuls, a representative of the company, is now in America for this purpose and will continue his trip to Soerabaya.

THE DOMINION OF CANADA.

ISSUED MAY 31, 1918.

- 184,129. Tire with resilient core. O. J. Hicks, Centerburg, O., U. S. A.
 184,137. Armored pneumatic tire. I. L. Leo, Toronto, Ont.
 184,139. Tire. J. Lorenz, Milwaukee, Wis., U. S. A.
 184,140. Shoulder brace. H. V. A. Loring, Chicago, Ill., U. S. A.
 184,141. Tire. F. Lotter, Elkhart, Mich., U. S. A.
 184,145. Cushion for wheels. C. S. Martin, Washington, D. C., U. S. A.
 184,186. Tire rim. H. Stinemetz, Calgary, Alta.
 184,222. Liner for pneumatic tires. The Dunlop Tire and Rubber Goods Co., Limited, assignee of T. A. Burns—both of Toronto, Ont.
 184,228. Vulcanizable tire patch. The Marvel Accessories Manufacturing Co., assignee of S. I. Rose—both of Cleveland, O., U. S. A.
 184,440. Resilient tire. O. A. Kondelke, Cicero, Ill., U. S. A.
 184,518. Inner tube. S. Johnstone and W. E. Doran, co-inventors—both of St. Catharines, Ont.
 184,589. Pneumatic wheel. W. T. Newman, Vancouver, B. C.
 184,597. Waterproof stocking with integral vulcanized rubber interlining. A. Richard, Hamilton, Ont.

THE UNITED KINGDOM.

ISSUED JULY 17, 1918.

- 115,748. Diver's dress with rubber collar securing helmet to dress. R. H. Davis, 187 Westminster Bridge Road, London.
 115,756. Webber—both for swimming. J. A. and E. A. E. Holdsworth—both of 24 St. Ann's Villas, Holland Park, Kensington, London.
 115,770. Buxtoe stiffener for boots, etc., of woven wire fabric embedded in rubber compound. J. H. Ordway, 77 Fuller street, Brookline, Massachusetts, U. S. A.
 115,784. Boot-sole with backing of rubber, rubberoid, etc. W. V. Brierley, Park Dale, near Hereford Road, Abergeenny, Monmouthshire.
 115,788. Sole or heel protector of raised rubber on canvas backing. F. J. Wood, 3 Raws street, Bank Parade, Burnley, Lancashire.
 115,841. Bicycle saddle with inflatable cushions. A. F. van Leuven, 41 Frankenslag, The Hague.
 115,912. Protected motor for cars, "tanks," aircraft, motorboats, etc., composed of coil fiber fabric and rubber, or balata vulcanized together. Coir Tyre Co., 56A Mosley street, and G. D. Rose, 14 Albert Park Road, Lower Broughton, Salford—both in Manchester.
 115,913. Fabric for driving belts, composed of layers of fabric and rubber. E. B. Boughten, Gleniffer, Doldington Road, Swallowback, Lincoln.
 115,914. Demountable rim for tires. J. J. Foley, 46 Kearny street, San Francisco, California, U. S. A.
 115,945. Tire cover with gable-shaped tread. E. B. Killen, 27 Queen Victoria street, London.
 115,955. Elastic band for securing wearing apparel. W. Lee, 36 Haymerle Road, Peckham, London.
 115,990. India rubber driving belts. W. M. Angus, St. John's Works, Newcastle-on-Tyne, and G. Lunney, Ingleborough View, Benham.
 115,993. Surgical appliances. E. Roddy, 108 West 61st street, New York City.
 116,001. Rubber-tired wheel for children's go-carts. W. H. Ball, 12 Terrace street, Hyson Green, Nottingham.
 116,014. Corsets with back lacing covered by elastic strip. M. Shaw, 1412 East 55th street, Chicago, Illinois, U. S. A.
 116,057. Artificial hands with rubber fingers stiffened with wire. J. J. Stubbs, City Road, Cardiff.
 116,079. Rectal syringe. H. Cottonet, Avenue de la République, Aubervilliers, France.
 116,081. Sole for boots and shoes, having layers of vulcanized wood fiber, etc., with fabric backing secured to them by rubber solution. Société Française du Caoutchouc, 57 rue Alexandre Dumas, Paris.
 116,087. Oxygen-administering apparatus with rubber bags. L. Durieu, 18 Boulevard des Brotteaux, Lyons, France.
 116,093. Spring wheels with cover of balata, etc. A. Andersen, 4 Rosenkrantzsgade, Copenhagen.
 116,127. Veil with elastic gathering thread at edge. A. Burnet, 6 Well street, Jewin street, London.
 116,155. Soothing tights. J. H. Davis, 194 Bristol Road, Birmingham.

ISSUED JULY 31, 1918.

- 116,191. Rubber tapping knives. Guthrie & Co., 5 Whittington avenue, Leadenhall street, London.
 116,351. Surgical injection apparatus. M. Day, 8 Albemarle street, Clerkenwell, London.
 116,376. Respirators. F. E. Jackson, 22 Beech Road, Chorlton-cum-Hardy, Manchester.
 116,382. Apparatus for administering anesthetics. E. V. Tomey, 134 Birchfield Road, Handsworth, Birmingham.
 116,390. Cushion tire. E. B. Killen, 27 Queen Victoria street, London.
 116,405. Sole for boots and shoes composed of layers of damp-proofed wood, vulcanized fiber, etc., glued together. C. A. Schleiminger and A. Metzler—both of Wohlen, Aargau, Switzerland.

ISSUED AUGUST 8, 1918.

- 116,424. Breathing apparatus for divers, etc. H. Wade, 111 Hatton Garden, London.
 116,448. Pneumatic tire-pressure gauge. J. M. Gowers, 801 Sutter street, San Francisco, Cal., U. S. A.
 116,534. Parachutes contained in flexible envelope. E. R. Calthrop, Eldon Street House, Eldon street, London.

- 116,607. Rubber solution container for tire-repair outfits. Dunlop Rubber Co., 14 Regent street, Westminster, and H. J. Dunn, 47 Kingsbury Road, Gravely Hill, Birmingham.
 116,615. Waterproof cover for ladies' hats. W. D. L. Busby, School House, Clifton-upon-Dunsmore, Warwickshire.
 116,632. Revolvable rubber pad for heels, soles, and tips. T. C. Redfern, G. W. Richards, and Redfern's Rubber Works, Limited, Dawson street, Hyde, Cheshire.
 116,677. Means for attaching rubber tires to rims. W. T. G. Ellis, C. O. R. McLeod, 15 Cambridge street, Glasgow.

ISSUED AUGUST 14, 1918.

- 116,726. Hypodermic injector with rubber piston plug. R. G. J. McEntee, 23 Pembroke Park, Dublin.
 116,733. Suction appliances in dentures. S. J. Everett and A. Kirkman, Oakleigh, Duppas Hill Road, Croydon, Surrey, and H. O. Cottle, 15 Charlotte street, London.
 116,798. Stepper for carbony, with rubber washer. British Dyes, Limited, and J. Turner, Turnbridge Chemical Works, J. Bruce, Wood Villa, Berry Brow, and J. D. Eastwood, 16 Batley avenue, Marsh—all in Huddersfield, Yorkshire.
 116,812. Rubberized fabric container for transporting and storing gas. A. C. Spencer, E. Allen, and E. G. Cole, 56A Highbury Grove, London.
 116,813. Blotting appliance with holding device of rubber. E. Howarth, Spring Field, Molesey, Lutteden Post, Yorkshire.
 116,818. Flanged rubber sole for boots, etc. A. Dales, trading as A. Dales & Co., India Rubber Mills, Blake street, Stratford Road, Manchester.
 116,836. Hose coupling. F. Reddlaway & Co. and J. Musket, Cheltenham street, Penderel, Manchester.

ISSUED AUGUST 21, 1918.

- 116,856. Boot-sole protector. F. J. Wood, 3 Raws street, Bank Parade, Burnley, Lancashire.
 116,872. Valve for feeding bottles. A. Jackson, Woodleigh, Temple Gardens, Golder's Green, London.
 116,913. Improvement in valve for rubber bag in straw-hat presses. A. H. Mosley and C. Macintosh & Co., Cambridge street, Manchester.
 116,975. Elastic cords for muscle exercisers. H. J. Wareham, 146 Blackfriars Road, London.
 116,986. Rubber-covered stoppers for vacuum flasks. A. W. Brunette, Golconda, Upper Court Road, Epsom, Surrey, and C. C. Seabrough, 15 Took's Court, Curator street, London.
 117,012. One-piece life-saving suit. P. Borgan, 1014 Hawthorne avenue, Portland, Ore., U. S. A.

ISSUED AUGUST 28, 1918.

- 117,063. Rubberized fabric container for transporting and storing gas. A. C. Spencer, E. Allen, and E. G. Cole, 56A Highbury Grove, London. (See patent No. 116,812.)
 117,093. Tire tread. D. Dunn, 63 Tierney Road, Streatham Hill, London.
 117,102. Eyelid retractor. H. Shanker, Civil Hospital, Delhi.
 117,119. Rubberized canvas aircraft cushioning device. T. Sloper, Southgate, Devizes, Wiltshire.
 117,133. Dental articulators with rubber-shod jaws. A. W. Fisher, Bryn Estyn, Whitchurch, Shropshire.
 117,148. Respiration modifier. J. Baeo, 80 Holland Park, London. (P. Lassabiere; St. Hilaire, St. Mesmin, Loiret, France.)
 117,177. Inner-tube liner. I. B. Jeffries, trading as I. Benjamin, 3 John street, Llanelli, Carmarthenshire.

THE FRENCH REPUBLIC.

PATENTS ISSUED (WITH DATES OF APPLICATION).

- 486,768. (October 23, 1916.) Improvements in abdominal supporters such as corsets. F. G. Auguste.
 486,809. (September 7, 1917.) Tiffy Life Belt Manufacturing Co.
 486,824. (September 14, 1917.) Life-saving vest. H. L. Ziman.
 486,886. (September 19, 1917.) Improvements in vehicle wheels. H. Allen.
 486,925. (September 25, 1917.) Improvements in tires. G. A. Morier.
 486,944. (December 9, 1914.) Improvements in wheels having inner pneumatic tires. J. Goussier, and R. de Dumptiere.
 487,044. (October 4, 1917.) Pneumatic tire protector. J. F. Bioletto.
 487,085. (October 8, 1917.) Wheel rims and tires. H. Rajlawich.
 487,096. (October 10, 1917.) Ball valve of rubber or other elastic substance. M. S. Reley.
 487,137. (October 12, 1917.) Pneumatic hub for vehicle wheels. H. Schade van Westrum.

NEW ZEALAND.

ISSUED JULY 11, 1918.

- 38,792. Indoor game. J. S. Wearn, Christchurch.
 40,033. Combined hard and rubber packing for tubular connections. J. Fraser, "Arnprior," Rangers Road, Neutral Bay, and E. L. Ernest, Maromba, Nelson street, Woolahra—both of Sydney, New South Wales.
 40,055. Rubber-pad attaching device for horsehoes. R. P. Gray, Ellangowan, Bishop's Road, Sutton Coldfield, Warwick, England.

TRADE MARKS.

THE UNITED STATES.

- NO. 101,452. The word HAWK—gold balls. North British Rubber Co., Limited, Edinburgh, Scotland.
 102,788. Representation of a tire in ellipse with two parallel white stripes on tread portion—tire covers. Gates Manufacturing Co., Indianapolis, Ind.

- 110,118. The words **PEE-MESSERMAN** with a representation of two crossed bayonets at each end and an oblique black white space superimposed above the middle of the word—rubber or rubber-and-fabric pneumatic vehicle tires.
- 110,213. The words **JIFFY-ALT**—waterproof fabrics for protecting inner garments, etc. Jiffy-Alt Corp., New York City.
- 110,462. The word **ACRO**—rubber-and-fabric pneumatic vehicle tires. American La France Fire Engine Co., Inc., Elmira, N. Y.
- 110,463. The word **ACRO**—rubber-and-fabric pneumatic vehicle tires. American La France Fire Engine Co., Inc., Elmira, N. Y.
- 110,471. The word **DEERO**—rubber rings for fruit jars. The Deis-Fertig Co., Dover, O.
- 110,592. Representation of a negro running, with a turtle biting one heel, a turtle being in the background, and the slogan underneath, "Watch out, loose for thunder"; above all, the words **TURTLE GRIP**—patches for repairing inner tubes of all kinds. Southern Turtle-Grip Co., Houston, Tex.
- 110,598. Representation of a patched pneumatic tire, with a stuffing-rubber and composition hose, and rubber, leather, and composition belting and packing. Geo. B. Carpenter & Co., Chicago, Ill.
- 110,635. The word **CONQUESTOR**—rubber hose and hose made of composition rubber or rubber and fabric. Vamohles Rubber Manufacturing Co., Jersey City, N. J.
- 110,654. The word **VACU**—tire patches and reinforcers. J. H. and G. L. Atwood, Inc., Boston, Mass.
- 110,815. The words **DEU-TEX** in script letters arranged in a semi-circle—leather or fabric belts for personal wear. Live Leather Belt Co., Inc., New York City.
- 110,867. The words **WAXED**—rubber boots and shoes of leather, fabric, and rubber, combined. Beacon Falls Rubber Shoe Co., Beacon Falls, Conn.
- 110,916. The word **POLAR**—zinc oxide used as a filler for rubber goods. The American Metal Company, New York City.
- 111,061. The word **BANNER**—rubber and composition hose and rubber, leather, and composition belting and packing. Geo. B. Carpenter & Co., Chicago, Ill.
- 111,232. Representation of a shield upon which is superimposed a double outlined triangle with a pair of scales within and the letters G and H to the right and left of the apex—rubber boots and shoes, etc. Von Der Heyde & John, New York City.
- 111,234. Representation of a shield upon which is superimposed a double-outlined triangle with a pair of scales within and the letters G and H to the right and left of the apex—rubber coats and various other articles of wearing apparel. Von Der Heyde & John, New York City.
- 111,289. The word **INTAS**—fountain pens. Adams, Cushing & Foster, Inc., Boston, Mass.
- 111,290. The word **ATAP** enclosed within a modified ellipse suggesting the outline of a bathing cap—rubber eraser, rubber bands, fountain pens, etc. Adams, Cushing & Foster, Inc., Boston, Mass.
- 111,293. Silhouette of Ajax rolling a tire—rubber gums, namely: combination, combination tube, cushion, and tread. Ajax Rubber Co., Inc., Millbrook, N. Y.
- 111,294. Silhouette of Ajax rolling a tire—vulcanizing cement and air-driving pure-rubber patching cement. Ajax Rubber Co., Inc., Millbrook, N. Y.
- 111,325. The word **VICTOR**—golf balls. Wright & Ditson, Boston, Mass.
- 111,370. The word **TRE**—superheating preparation for pneumatic tires. Tube Manufacturing Co., Saint Louis, Mo.
- 111,688. The word **ACRO**—rubber boots and shoes. The Acro Rubber Tire & Shoe Co., Elmhurst, Ill.

THE DOMINION OF CANADA.

- 25,515. The word **ARMYEA**—garters, etc. Wagner & Brandon, 54 Alderbury, London, E. C., Eng.
- 25,543. The word **TRAC**—rubber-and-fabric pneumatic and solid tires, pneumatic tubes, tire accessories, hose, belting, packing, tubing, molded goods, cements, leather substitutes, rubber or composition belts and soles. Tire and Rubber Co. of Canada, Limited, Toronto, Ont.
- 25,545. The word **COOLASTIC**—bandages. Everlastik, Inc., Boston, Mass., U. S. A.
- 25,567. Representation of a geometric figure—rubber tires. The Brunswick-Balke-Clender Co., Chicago, Ill., U. S. A.

ARMY AND NAVY AWARDS.

GENERAL ENGINEER DEPOT AWARDS.

THE following awards of mechanical rubber goods have been announced at the general engineer depot, United States army.

CORD, PACKING-HOUSE.—\$39, The B. F. Goodrich Rubber Co. **GASKETS, RUBBER.**—6,000 pounds, \$0.25, Quaker City Rubber Co., Philadelphia, Pennsylvania.

PACKING.—Asbestos sheet: 2,000 pounds, \$0.75, Manhattan Rubber Manufacturing Co., Passaic, New Jersey.

SHEETS, RUBBER.—75 pounds, \$0.80, The B. F. Goodrich Rubber Co., Akron, Ohio.

FIELD MEDICAL SUPPLY AWARDS.

The following awards of rubber sundries have been made by the field medical supply depot, Washington, District of Columbia.

APRONS.—35,000, \$0.55¼ each, L. C. Chase Co.

ATOMIZERS, HAND.—3,500, \$0.82 each, De Vilbiss Manufacturing Co.

BANDS, ELASTIC, PURE GUM.—5,000 gross, \$0.16, The B. F. Goodrich Rubber Co.

BASINS.—25,000, \$0.55 each, United States Rubber Co.

BULBS.—20,000, \$0.0105 each, Tyer Rubber Co.

GLOVES.—8,000 pairs, \$0.25, Miller Rubber Co.

POUCHES FOR RUBBER GLOVES.—7,000, \$0.15 each, L. C. Chase Co.

STOPPERS.—250,000, \$0.52 per pound, F. A. Cigol Rubber Co.

SYRINGES.—Hard rubber, 8,350, \$0.20 each, Charles Schmid Co.; 20,000, \$0.30 each, Tyer Rubber Co.; rectal, 10,000, \$0.94 each, American Hard Rubber Co.

TOURNIQUETS AND BANDAGES.—2,500, \$0.75 each, Parker, Stedman & Co.

TUBES, STOMACH.—3,000, \$0.54 each, The B. F. Goodrich Rubber Co.

NAVAL SUPPLY AWARDS.

The following awards have been made for furnishing rubber goods for navy yards:

FERRULES, RUBBER.—135,000, \$4,156.65, Ohio Rubber Co., Cleveland, Ohio.

GASKETS.—Strip and sheet gum, \$103,278.20; 13,000 pounds, \$5,722, Hewitt Rubber Co., Buffalo, New York; molded rubber: 8,000 pounds, \$4.60; 300 pounds, \$183, New Jersey Car Spring & Rubber Co., Inc., Jersey City, New Jersey.

HOSE.—Rubber, steam, 3,000 feet, \$1,335, Hamilton Rubber Co., Trenton, New Jersey; rubber, wash deck, 40,000 feet, \$0.529, Hewitt Rubber Co., Buffalo, New York.

PACKING.—Compressed fiber sheet, 100,000 pounds, \$42,000; 16,000 pounds, \$6,720, The B. F. Goodrich Rubber Co., Akron, Ohio.

WIRE, RUBBER-COVERED.—21,000 feet, \$343.35, American Steel & Wire Co., Chicago, Illinois, and \$504.20, Bourn Rubber Co., Providence, Rhode Island.

NAVY EMERGENCY PURCHASES.

The following awards have been made by the bureau of supplies and accounts, Navy Department, for Navy emergency purchases:

BALLOONS, RED RUBBER.—115, \$37.50, Faultless Rubber Co., Ashland, Ohio.

CONDUCTORS, TWIN FLAT.—15,000 feet, \$9,675, Boston Insulated Wire & Cable Co., Epping, New Hampshire.

MANOMETERS.—20, \$345, Goodyear Tire & Rubber Co.

PARACHUTES, BASKET TYPE.—2, \$630, Goodyear Tire & Rubber Co., Akron, Ohio.

VALVES, GAS.—One 16-inch, \$123.70, Goodyear Tire & Rubber Co., Akron, Ohio.

PANAMA CANAL AWARDS.

The following awards have been made for furnishing supplies for the Panama Canal:

HOSE, WATER.—500 feet, \$292.50, Hamilton Rubber Co., Trenton, New Jersey.

TIRES.—30, \$1,947.46, Goodyear Tire & Rubber Co., Akron, Ohio; \$606.40, Century-Plainfield Tire Co., Plainfield, New Jersey.

CENSUS AND CONTROL OF THE PLANTATION RUBBER INDUSTRY.

THE August, 1918, issue of "The Times Trade Supplement," publishes an article by J. S. M. Rennie, which emphasizes the need for a compulsory census of all rubber plantations controlled by British subjects. The writer urges that the collecting of such statistical data is necessary in order that some controlling authority "should be in a position in times of stress and possible overproduction, so to control outputs as to prevent a cllapse in the price of the commodity and the opportunity which any

such crisis would offer to powerful cliques (probably 'alien') to buy up a controlling interest."

Since no visible move has been made by the authorities to collect such figures, the writer has compiled from all the available hand-books from the various rubber-producing centers the following tables showing the location and domicile of all the known rubber plantations:

DOMICILED IN UNITED KINGDOM.

Location.	Acres.
Federated Malay States.....	586,883
Straits Settlements.....	109,500
Ceylon.....	179,695
South India.....	41,830
British Borneo.....	29,880
British Burma.....	24,620
South Sea Islands.....	5,000
Sumatra.....	98,000
Java.....	108,830
Dutch Borneo.....	5,100

1,189,328

DOMICILED IN STRAITS SETTLEMENTS.

Location.	Acres.
Federated Malay States.....	20,270
Straits Settlements.....	40,000
Burma.....	1,770
Sumatra.....	6,055
Straits Settlements (private owners).....	10,000
Federated Malay States (private owners).....	20,000
	98,095

DOMICILED IN FEDERATED MALAY STATES.

Location.	Acres.
Federated Malay States.....	13,348
Federated Malay States (private owners).....	105,000
	118,348

DOMICILED IN CEYLON.

Location.	Acres.
Ceylon.....	40,000
Ceylon (private).....	10,000
Federated Malay States.....	7,000
	57,000

DOMICILED IN SHANGHAI (BRITISH).

Location.	Acres.
Federated Malay States.....	30,000

DOMICILED IN HOLLAND AND NETHERLANDS EAST INDIES.

Location.	Acres.
Federated Malay States.....	5,000
Sumatra.....	120,000
Java.....	100,000
Sumatra (private).....	10,000
Java (private).....	20,000
Dutch Borneo.....	5,000
	260,000

DOMICILED IN FRANCE AND BELGIUM.

Location.	Acres.
Federated Malay States.....	20,000
Sumatra.....	60,000
Java.....	10,000
Cochin China.....	10,000
	100,000

DOMICILED IN UNITED STATES OF AMERICA.

Location.	Acres.
Sumatra.....	35,000

DOMICILED IN GERMANY.

Location.	Acres.
Sumatra.....	3,400

Total planted area.....1,911,171

According to domicile, therefore, the percentage controlled by the different nationalities may be summed up as follows:

	Acres.	Per Cent.
British Domicile.....	1,492,771	or 79
Dutch Domicile.....	260,000	or 13½
French and Belgian Domicile.....	100,000	or 5¼
United States of America Domicile.....	55,000	or 2½
German Domicile.....	3,400	or 1
Totals.....	1,911,171	100

But if the place where planted is considered, the control is vested as follows:

Location.	Acres.
Federated Malay States and Johore.....	807,491
Straits Settlements.....	139,500
Ceylon.....	229,695
South India.....	41,830
British Borneo.....	29,880
British Burma.....	24,620

South Sea Islands.....	5,000
	1,299,786
	(or 67 per cent)

DUTCH AND OTHERS.

Location.	Acres.
Sumatra.....	352,455
Java.....	238,830
Dutch Borneo.....	10,100
Cochin China.....	10,000
	611,385
	(or 33 per cent)

When domicile and location are combined, the result is:

Location.	Acres.
British Empire.....	1,517,771 or say 80 per cent
Dutch and others.....	393,400 or say 20 per cent
	1,911,171

Calculating that this area will yield an annual crop of 380,000 tons of rubber about 1920, the distribution will be as follows:

BASED ON DOMICILE.

Location.	Tons
British Empire.....	281,000
Dutch Empire.....	75,000
France and Belgium.....	15,000
United States of America.....	8,000
Germany.....	1,000
	380,000

BASED ON ESTATE LOCATION.

Location.	Tons
British Empire.....	255,000
Dutch East Indies, etc.....	125,000
	380,000

BASED ON DOMICILE AND ANY LOCATION COMBINED.

Location.	Tons
British.....	290,000
Dutch and others.....	90,000
	380,000

Unless some control is exercised, it is pointed out that enemy and neutral countries, will be able to obtain about 15 per cent of the estimated crop for 1920, if peace has ensued by that time, at the same price per pound as the United Kingdom and the Allies.

Furthermore, says the writer, if conditions permit plantation companies and the powerful American and British rubber goods manufacturers to plant *ad libitum*, the planted area ten years hence may easily be 4,200,000 acres, which at 375 pounds per acre per annum would give a total crop of 700,000 tons. And in the event that the demand is less by the smallest fraction than the supply, a serious drop in prices is foreseen, accompanied by an equally considerable fall in the market value of an acre of rubber. This circumstance would give a powerful clique backed by the large American, British, and French manufacturers, the chance to buy up control of the great bulk of plantation companies, and to regulate prices so that members of the trust would be able to undersell all manufacturers outside the clique.

ADVOCATE MINIMUM RUBBER PRICES.

The rubber planters of the Dutch East Indies have just started a campaign to secure the fixing of minimum prices for rubber and the licensing of its export. They also seek official assistance in an attempt to secure the cooperation of the planters in Ceylon and the Malay States. But while these efforts are being made in Java, the Selangor branch of the Federated Malay States Chamber of Commerce is launching a movement for the total exclusion from the Singapore market of rubber produced in the Dutch East Indies, during the war, or, if prohibition is impossible, for a special import tax of five per cent. It seems to be felt that the American Government should do nothing to assist the import of Dutch rubber to the detriment of Allied producers. The Planters' Association of Malaya has asked the British Government to induce other rubber-producing countries to limit their output, and it is pointed out that the British War Cabinet has adopted the principle of preferential trade within the Empire.

Review of the Crude Rubber Market.

Copyright, 1918.

NEW YORK.

CRUDE rubber imports for October, November and December have been fixed at 25,000 tons and will be allocated to rubber manufacturers according to the program promulgated September 22, by the War Trade Board, and published elsewhere in this issue.

PLANTATIONS.—Quiet market conditions have prevailed in this market during the past month, as consumers were generally satisfied with small lots sufficient for immediate requirements, and are awaiting new developments. Interest was lacking to a great extent in either stock afloat or for future shipment, and the scarcity of allocation certificates indicated that manufacturers were supplied.

About the middle of the past month considerable free rubber was offered by manufacturers who were overstocked, and sales of small lots were reported to have been made at prices ranging from 51 to 61 cents for Crêpe and 49½ to 60 for Ribs. Trading in allocation certificates was an unusual feature of the market.

The Far Eastern market received considerable attention from the manufacturers, relieving in a measure the distressed condition in that quarter. Quotations on October and November shipments of Crêpe varied from 35 to 40 cents, and on Ribs from 33½ to 38 cents during the month.

PARAS.—Upriver fine, for future shipment was quoted at 57½ to 60 cents, and coarse sold for 30½ to 31 cents. Upper caucho ball was placed at 30½ cents, and Cametá sold for 21 cents. A few lots of free Upriver fine were sold at maximum prices.

STATISTICS.—The United States plantation imports for August, 1918, were 15,153 tons, compared with 8,473 tons for the same month a year ago. Pará imports for August, 1918, were 1,760 tons, compared with 1,744 tons last year.

NEW YORK SPOT QUOTATIONS.

Following are the New York spot quotations, one year ago, one month ago, and September 28. Government option prices, c. i. f. New York are given in the last two columns.

PLANTATION HEVEA—	Free Rubber.		
	October 1, 1917.	September 1, 1918.	September 28, 1918.
First latex crêpe.....	67½ @	63 @	63 @
Hevea first crêpe.....	62 @	60 @	60 @
Amber crêpe No. 1.....	61 @	60 @	60 @
Amber crêpe No. 2.....	60 @	58 @	58 @
Amber crêpe No. 3.....	59 @	57 @	57 @
Amber crêpe No. 4.....	59 @	60 @	60 @
Brown crêpe, thick clean.....	59 @	60 @	60 @
Brown crêpe, thin clean.....	59 @	60 @	60 @
Brown crêpe, thin specky.....	55 @ 56	50 @	50 @
Brown crêpe, rolled.....	46½ @	44 @	44 @
Smoked sheet, ribbed standard quality.....	65½ @ 66	62 @	62 @
Hevea ribbed smoked sheets.....	61 @ 64½	61 @	61 @
Smoked sheet, plain standard quality.....	61 @ 64½	61 @	61 @
Hevea plain or smooth smoked sheets.....	61 @ 64½	61 @	61 @
Unsmoked sheet, standard quality.....	61 @ 62	60 @	60 @
Hevea unsmoked sheets.....	47½ @	46 @	46 @
Colombo scrap, No. 1.....	46½ @	44 @	44 @
Colombo scrap, No. 2.....	46½ @	44 @	44 @
BRAZILIAN PARAS—			
Upriver fine.....	68 @	68 @	68 @
Upriver medium.....	62 @	63 @	63 @
Upriver coarse.....	46½ @ 47	40 @	40 @
Upriver weak fine.....	41 @	40 @	40 @
Upper caucho ball.....	57 @	59 @	59 @
Islands fine.....	57 @	59 @	59 @
Islands medium.....	57 @	59 @	59 @
Islands coarse.....	29½ @	27 @	27 @
Cametá.....	30 @	28 @	28 @
Lower caucho ball.....	39 @	36 @	36 @
Peruvian fine.....	63 @ 64	67 @	67 @
Tapios fine.....	65 @	60 @	60 @

Free Rubber.

	October 1, 1917.			September 1, 1918.			September 28, 1918.		
	1917.	1918.	1918.	1917.	1918.	1918.	1917.	1918.	1918.
AFRICANS—									
Niger lake, prime.....	28 @	28 @	28 @	28 @	28 @	28 @	28 @	28 @	28 @
Benigala, extra No. 1, 28%.....	27½ @	43 @	33 @	27½ @	43 @	33 @	27½ @	43 @	33 @
Benigala, No. 2, 32%.....	24 @	39 @	39 @	24 @	39 @	39 @	24 @	39 @	39 @
Camero, prime, black inspec.....	56 @	48 @	48 @	56 @	48 @	48 @	56 @	48 @	48 @
Camero, prime, red upper.....	57 @	48 @	48 @	57 @	48 @	48 @	57 @	48 @	48 @
Rio Nunez sheets and strings.....	65 @	55 @	55 @	65 @	55 @	55 @	65 @	55 @	55 @
Camero miguers.....	64 @	55 @	55 @	64 @	55 @	55 @	64 @	55 @	55 @
Massi sheets and strings.....	64 @	55 @	55 @	64 @	55 @	55 @	64 @	55 @	55 @
CENTRALS—									
Orinto scrap.....	41 @	39 @	39 @	41 @	39 @	39 @	41 @	39 @	39 @
Emberaba sausage.....	46 @	39 @	39 @	46 @	39 @	39 @	46 @	39 @	39 @
Central scrap.....	40 @ 40	39 @	39 @	40 @ 40	39 @	39 @	40 @ 40	39 @	39 @
Central scrap and strip.....	34 @ 36	@	@	34 @ 36	@	@	34 @ 36	@	@
Central wet sheet.....	31 @ 33	@	@	31 @ 33	@	@	31 @ 33	@	@
Guayule, 20% guarantee.....	32 @	35 @	35 @	32 @	35 @	35 @	32 @	35 @	35 @
Guayule, dry.....	@	48 @	48 @	@	48 @	48 @	@	48 @	48 @
MANICOBAS—									
Ceara negro heads.....	46 @	37 @	37 @	46 @	37 @	37 @	46 @	37 @	37 @
Ceara scrap.....	28 @	37 @	37 @	28 @	37 @	37 @	28 @	37 @	37 @
Manicoba (basis 30% loss washing and drying).....	39 @	36½ @	36½ @	39 @	36½ @	36½ @	39 @	36½ @	36½ @
Manicoba extra.....	35 @	@	@	35 @	@	@	35 @	@	@
Manicoba regular.....	31 @ 33	@	@	31 @ 33	@	@	31 @ 33	@	@
Manicoba thin sheet.....	37½ @ 38	35 @	35 @	37½ @ 38	35 @	35 @	37½ @ 38	35 @	35 @
Manicoba thick sheet.....	32 @	@	@	32 @	@	@	32 @	@	@
EAST INDIAN—									
Assam crêpe.....	60 @ 61	58 @	58 @	60 @ 61	58 @	58 @	60 @ 61	58 @	58 @
Assam onions.....	56 @	54 @	54 @	56 @	54 @	54 @	56 @	54 @	54 @
Penang block scrap.....	38 @ 39	37 @	37 @	38 @ 39	37 @	37 @	38 @ 39	37 @	37 @
BALATA—									
Block, Ciudad Bolivar.....	67 @ 68	71 @	71 @	67 @ 68	71 @	71 @	67 @ 68	71 @	71 @
Columbia.....	61 @	61 @	61 @	61 @	61 @	61 @	61 @	61 @	61 @
Surinam sheet.....	77 @	95 @	95 @	77 @	95 @	95 @	77 @	95 @	95 @
Surinam sheet.....	@	97 @	97 @	@	97 @	97 @	@	97 @	97 @
PONTIANAR—									
Banjermassin.....	12 @	15 @	15 @	12 @	15 @	15 @	12 @	15 @	15 @
Palemhane.....	@	16 @	16 @	@	16 @	16 @	@	16 @	16 @
Pressed block.....	19½ @ 20	25 @	25 @	19½ @ 20	25 @	25 @	19½ @ 20	25 @	25 @
Sarawak.....	@	14 @	14 @	@	14 @	14 @	@	14 @	14 @
GUTTA PERCHA—									
Gutta Siak.....	20 @	28 @	28 @	20 @	28 @	28 @	20 @	28 @	28 @
Red Macassar.....	@	3,00 @	3,00 @	@	3,00 @	3,00 @	@	3,00 @	3,00 @

* Rubber Association of America nomenclature.

RECLAIMED RUBBER.

While more active interest in reclaimed rubber was noted during the past month, the movement has not had any appreciable effect on the market. Now that the regulations governing crude rubber allocations for this quarter are known, there is reason in expecting that market conditions will improve. Prices have remained the same as a month ago.

NEW YORK QUOTATIONS.

SEPTEMBER 26, 1918.

Subject to change without notice.

Standard reclaims:		
Floating.....	lb.	.35 @ .40
Friction.....	lb.	.40 @ .45
Mechanical.....	lb.	.12 @ .13
Reel.....	lb.	.20 @ .25
Shoe.....	lb.	.15 @ .15½
Tire, auto.....	lb.	.18 @ .18½
Truck.....	lb.	.13 @ .13½
White.....	lb.	.24 @ .25

THE MARKET FOR COMMERCIAL PAPER.

In regard to the financial situation, Albert B. Beers, broker in crude rubber and commercial paper, No. 68 William street, New York, advises as follows:

The demand for commercial paper during September has been rather light, as for several months past, and the volume of rubber paper has also been small, the best names being quoted at 6¼ to 6½ per cent, and those not so well known, 6¾ to 7 per cent. With the drive for the Fourth Liberty Loan now on, the demand for paper will doubtless be very light.

COMPARATIVE HIGH AND LOW SPOT RUBBER PRICES.

	1918.	1917.	1916.
Plantations:			
First latex crepe	\$0.63 @ 0.60 1/2	\$0.61 @ 0.62 1/2	
Smoked sheet ribbed	.62 @ .59 1/2	.64 @ .61	
Paras:			
Upriver, fine	.68 @ .68	.60 1/2 @ .63 1/2	\$0.60 @ 0.74
Upriver, coarse	.60 @ .40	.46 @ .42 1/2	.41 @ .44
Islands, fine	.59 @ .59	.55 @ .50	.48 @ .62
Islands, coarse	.57 @ .47	.49 @ .47 1/2	.28 @ .30
Cameta	.58 @ .28	.30 @ .28	.32 @ .33

WEEKLY RUBBER REPORT.

GUTHRIE & CO., LIMITED, Singapore, report [August 1, 1918]:

The weekly rubber auction held yesterday and to-day opened very quietly, and in the early stages not more than 48 1/2 cents per pound was obtainable for the best ribbed smoked sheet. Later in the day, however, additional buyers came in, and, though prices for the leading grades show a reduction as compared with last week, there was a good demand at the lower level. The top price for both fine pale crepe and ribbed smoked sheet was 50 1/2 cents, being a decline of one cent upon crepe and 2 1/2 cents upon sheet. Brown and good dark crepes sold readily, but prices do not show any perceptible improvement. Of 1,170 tons catalogued, 628 tons were sold.

The following was the course of values:

	In Singapore per Pound.	Sterling Equivalent per Pound in London.
Sheet, fine ribbed smoked	46c @ 50 1/2c	1/6 @ 1/7 1/4
Sheet, good ribbed smoked	36 @ 40	1/3 @ 1/2 6
Sheet, plain, unsmoked		
Crepe, fine pale	48 1/2 @ 50 1/2	1/6 1/4 @ 1/7 1/4
Crepe, good pale	38 @ 40	1/8 @ 1/7 6
Crepe, fine brown	37 @ 40	1/8 @ 1/7 1/4
Crepe, good brown	17 @ 36	1/16 @ 1/7 3/8
Crepe, dark	12 @ 35	7/94 @ 1/7
Crepe, bark	3 1/2 @ 24 1/2	7/65 @ 1/13 1/2
Scrap, virgin, and pressed	15 @ 19 1/2	7/91 @ 1/10 1/2
Scrap, waste	11 @ 22	7/88 @ 1/11 1/2

*Quoted in S. S. currency.

SUMATRA RUBBER SHIPMENTS INCREASE.

Exports of plantation rubber from Belawan, Deli (Sumatra), increased from 16,418,000 pounds for 1916 to 28,949,000 pounds in 1917. The amounts were distributed as follows:

	1916.	1917.
United States	8,340,000	20,136,600
Holland	38,000	
Great Britain	5,636,000	5,516,400
Canada	20,000	8,800
Straits Settlements	2,394,000	3,333,000
Hongkong		13,300
Japan		41,800
Totals	16,418,000	28,949,800

ARRIVALS AT THE PORT OF NEW YORK.

PLANTATIONS.
TO NEW YORK.

	Pounds.
August —, By the —, from Batavia:	729,300

August —, By the —, from Colombo:	201,660
Meyer & Brown	44,800

September —, By the —, from Batavia:	358,200
Meyer & Brown	87,400

September —, By the —, from Colombo:	67,200
General Rubber Co.	

September —, Ex: —:	
J. T. Johnstone & Co.	85,190

September —, Ex: —:	
J. T. Johnstone & Co.	29,400

September —, Ex: —:	
J. T. Johnstone & Co.	49,200

September —, By the —, from Liverpool:	
Meyer & Brown	12,700

September —, By rail from Eagle Pass:	
Continental-Mexican Rubber Co.	48,000

CRUDE RUBBER ARRIVALS AT PACIFIC COAST, AS REPORTED.

PLANTATIONS.

September —, By the —, from Singapore:	269,500
General Rubber Co.	56,000
Fred. Stern & Co.	

PLANTATION RUBBER EXPORTS FROM JAVA.

	July.	June 30, 1918.
To—		
England	1,482,000	1,064,000
United States	1,482,000	723,000
Singapore	76,000	1,349,000
Japan		70,000
Other countries		51,000
Totals	1,641,000	2,143,000
From		
Datavisi	925,000	5,680,000
Samarang	27,000	295,000
Soerabaya	692,000	3,793,000
Other ports		5,000
Totals	1,644,000	9,768,000

CRUDE RUBBER ARRIVALS AT THE PORT OF NEW YORK.

In compliance with the Government's request, dates and names of vessels have been deleted in the following statistics:

[The Figures Indicate Weight in Pounds.]

PARAS.

Fine. Medium. Coarse. Caucho. Cameta. Totals.

August —, By the —, from Para and Manaoas:				
Alden's Successors, Limited	54,639	3,625	16,243	22,125
H. A. Aslett & Co.	35,000	11,000		
General Rubber Co.	37,920		56,600	447,800
September —, By the —, from Para and Manaoas:				
H. A. Aslett & Co.	36,000	12,500		
Meyer & Brown	767,200	67,200	26,900	
August —, By the —, from Para and Manaoas:				
Pell & Dumont	43,381			
Hagemeyer & Brown	67,200			
General Rubber Co.			443,520	
H. A. Aslett & Co.	93,000	8,000	12,500	
Meyer Brown	338,200		51,500	
September —, By the —, from Para and Manaoas:				
Hagemeyer & Brown			44,800	
General Rubber Co.			212,800	
H. A. Aslett & Co.	108,000	25,000		
Meyer & Brown	789,600		11,200	
September —, By the —, from Para:				
Meyer & Brown			69,400	
Including Medium.				

ARRIVALS AT THE PORT OF NEW YORK.

PLANTATIONS.
TO NEW YORK.

	Pounds.
September —, By the —, from Singapore:	544,300
Fred. Stern & Co.	302,400
Meyer & Brown	73,900

September —, By the —, from Colombo:	224,000
General Rubber Co.	

September —, By the —, from Batavia:	89,600
Fred. Stern & Co.	

September —, By the —, from Colombo:	62,700
Fred. Stern & Co.	

September —, By the —, from Batavia:	40,320
Fred. Stern & Co.	

September —, By the —, from Colombo:	470,400
Fred. Stern & Co.	

September —, By the —, from Batavia:	49,280
Fred. Stern & Co.	

CRUDE RUBBER ARRIVALS AT PACIFIC COAST AS STATED BY SHIP'S MANIFESTS.

SEATTLE AND TACOMA.
PLANTATIONS.

August —, By the —, from Kobe:	31,860
Swinehart Tire & Rubber Co.	

September —, By the —, from Singapore:	213,975
Firestone Tire & Rubber Co.	1,268,595
The B. F. Goodrich Co.	1,268,595
Swinehart Tire & Rubber Co.	133,380

August —, By the —, from Kobe:	31,860
Swinehart Tire & Rubber Co.	

September —, By the —, from Singapore:	213,975
Firestone Tire & Rubber Co.	1,268,595
The B. F. Goodrich Co.	1,268,595
Swinehart Tire & Rubber Co.	133,380

TO CLEVELAND, OHIO.

September —, By the —, from Singapore:	64,800
Mansfield Tire & Rubber Co.	

August —, By the —, from Kobe:	541,890
The Rubber Association of America, Inc.	

August —, By the —, from Manila:	27,625
F. R. Henderson & Co.	

September —, By the —, from Singapore:	24,975
Balfour Williamson & Co.	

September —, By the —, from Batavia:	37,940
Meyer & Brown	

United States Rubber Co.	13,500
Robinson & Co.	358,425

September —, By the —, from Batavia:	66,555
F. R. Henderson & Co.	

September —, By the —, from Batavia:	18,495
William H. Stiles	

September —, By the —, from Batavia:	8,505
Alden's Successors, Limited	

September —, By the —, from Kobe:	3,780
Nippon Yusen Kaisha	

August —, By the —, from Yokohama:	1,755
Mitsui & Co., Limited	

September —, By the —, from Batavia:	9,855
Edward Maitre Co., Inc.	

September —, By the —, from Batavia:	56,970
Alden's Successors, Limited	

September —, By the —, from Batavia:	4,050
Robinson & Co.	

September —, By the —, from Batavia:	16,200
Various	

*Footnote—The figures under this head and under Crude Rubber Arrivals at Pacific Coast as Reported, have been obtained from different sources; repetitions may, therefore, occur.

STATISTICS OF CRUDE AND MANUFACTURED RUBBER AT THE PORT OF NEW YORK.

IMPORTS.

July, 1918.

	POUNDS.	VALUE.
From Singapore:		
Latex	107,050	\$61,241.15
From:		
Canada	4,653	967
Salvador	438	79
Mexico	122,267	47,928.20
China	188	38
Brazil	2,803,042	879,940
Colombia	116,471	24,661
British Guiana	14,000	13,208
China	2,335	1,594
Straits Settlements	3,584,051	1,367,515
Other British East Indies	1,811,461	821,514
Dutch East Indies	320,655	136,474
Hongkong	2,500	1,344
Japan	223,225	124,909
Totals	9,133,203	\$3,484,632

Jelutong (Pontianak):

From—

Straits Settlements 784,815 \$70,379

Gutta percha:

From—

Straits Settlements 22,635 \$8,798

Balata:

From—

Panama 27,343 \$13,716

Brazil 7,429 5,236

Colombia 70,385 13,721

Bonito, Guiana 2,756 20,908

Dutch Guiana 41,584 31,423

Venezuela 11,146 5,416

Totals 180,513 \$100,949

Reclaimed rubber:

From—

France 90,206 \$16,125

England 416,996 28,644

Peru 655 33

Cuba 52,337 2,714

Totals 560,194 \$47,517

Totals unmanufactured, 10,681,360 \$3,721,275

Mexican compound:

India rubber:

From—

France 15,000 \$165

England 8,693 8,693

Scotland 208 208

Canada 20,295 20,295

Mexico 15 15

Totals 34,211 \$29,443

India rubber substitutes:

From—

Straits Settlements 34,951 \$5,173

EXPORTS OF DOMESTIC MERCHANDISE.

July, 1918.

MANUFACTURED.

POUNDS. VALUE.

Automobile tires:

From—

France \$8,664

Italy 585

England 1,982

Portugal 1,087

Holland 1,051

Panama 15,731

Nicaragua 10,685

Guatemala 17,083

France 6,522

Guatemala 81,952

Dominican Republic 3,202

Argentina 174,172

Bolivia 1,427

Brazil 20,556

Chile 48,175

Colombia 1,630

Guatemala 7,790

Peru 17,376

Uruguay 14,913

Venezuela 10,439

Japan 10,952

Australia 21,600

New Zealand 38,800

Other countries 16,630

Totals \$526,380

	POUNDS.	VALUE.
All other tires	6,011	\$24,623
Reclaimed rubber	184,639	1,488
Rubber boots	1,636	136,838
Rubber shoes	43,025	8,793
Druggists' sundries	28,627	40,442
Other rubber manufactures	243,027	28,627
Totals	434,000	\$101,027

EXPORTS OF FOREIGN MERCHANDISE.

July, 1918.

	POUNDS.	VALUE.
India rubber	184,639	\$107,148
Balata	61,857	43,530
Totals	246,496	\$150,678

RUBBER STATISTICS FOR THE DOMINION OF CANADA.

The import and export figures by countries usually published in this table are withheld by the Canadian Government.

IMPORTS OF CRUDE AND MANUFACTURED RUBBER.

May, 1918.

	POUNDS.	VALUE.
Rubber and gutta percha, crude	1,521,192	\$731,604
Rubber recovered	132,682	27,571
Hard rubber, in sheets and rods	5,250	4,113
Rubber substitute	83,459	12,850
Rubber powdered and rubber or gutta percha waste	345,868	23,600
Rubber thread, not covered	4,668	6,855
Palatal, crude	19	19
Chicle	548,243	255,638
Manufactures:		
Boots and shoes	18,956	
Beltine	31,342	
Waterproof clothing	17,886	
Hose, lined with rubber	13	
Mats and matting	13	
Belting	13,827	
Belting of cotton and rubber, not over seven inches wide, for card clothing	117	
Tires of rubber for all vehicles	176,255	
Rubber cement and all manufactures of India rubber and gutta percha—N. O. P.	138,267	
Hard rubber, unfinished, in tubes, for fountain pens, Webbing, over one inch wide	424	28,994

EXPORTS OF DOMESTIC AND FOREIGN RUBBER GOODS.

May, 1918.

	POUNDS.	VALUE.
Manufactured:		
Boots and shoes	\$130,141	
Hose	22,453	
Belting	10,100	
Tires	59,811	\$2,077
Waste	744	
All other manufactures	5,156	14,359
Crude	138,707	

LONDON AND LIVERPOOL RUBBER STATISTICS.

The import and export figures by countries usually published in this table are withheld by the British Government.

IMPORTS.

June, 1918.

	POUNDS.	£.
Unmanufactured:		
Crude rubber:		
From—		
London	3,345,000	397,304
Liverpool	999,300	117,028
Totals	4,344,300	514,332
Waste and reclaimed rubber:		
From—		
London	6,700	242

EXPORTS.

	POUNDS.	£.
Waste and reclaimed rubber:		
From—		
London	353,100	7,843

	POUNDS.	VALUE.
From Singapore:		
Latex	28,755	9,940
From:		
Canada	2,155	400.80
Goodyear Tire & Rubber Co.	5,400	
I. Littlejohn & Co.	249,750	
Mason & Co., Limited	5,535	341,685
From Singapore:		
F. R. Henderson & Co.	67,500	
Rubens & Co.	17,415	
Latex & Soda Sales	7,155	
Goodyear Tire & Rubber Co.	2,490	
I. T. Johnston & Co.	35,640	
Prof. Stern & Co.	22,815	
I. Littlejohn & Co.	5,400	
From Yokohama:		
Latex	6,210	
Latex & Soda Sales	2,970	9,180

SAN FRANCISCO PLANTATIONS.

	POUNDS.	VALUE.
From Singapore:		
Latex	45,000	
From:		
Latex	41,715	
Latex Rubber Association of America, Inc.	219,105	
I. Littlejohn & Co.	38,070	
Latex & Soda Sales	13,500	
Prof. Stern & Co.	20,925	
Mason & Co., Limited	12,330	
The B. T. Goodrich Co.	87,210	
Goodyear Tire & Rubber Co.	17,145	495,180
Latex shipment, ex-	370	
Latex & Soda Sales	13,000	62,505
From Hong Kong:		
Latex	19,305	
Latex & Soda Sales	216,000	216,000

The figures under this head and under Crude Rubber Arrivals at Pacific Coast as Reported, have been obtained from different sources; repetitions may, therefore, occur.

CUSTOM HOUSE STATISTICS.

PORT OF THE DISTRICT OF MASSACHUSETTS.

Imports.

POUNDS. VALUE.

Crude rubber:

From—

Straits Settlements 481,813 \$181,358

From:

Belting

From—

Canada \$310

Rubber boots:

From—

Canada 44 205

Rubber shoes:

From—

Cuba 1,719 \$1,690

Druggists' sundries:

From—

Cuba \$164

Cuba 2,835

Total \$2,999

Other manufactures of India rubber:

From—

England \$45

Canada 3

Newfoundland 272

Cuba 3,262

Total \$3,582

PORT OF THE DISTRICT OF MICHIGAN.

Imports.

POUNDS. VALUE.

Rubber scrap

Manufactures of India rubber

From—

England \$4,808

Canada 110,081

Reclaimed rubber

Other rubber tires

Other rubber tires

Belting, Hose, etc.

Druggists' sundries

All other manufactures of India rubber

Total \$43,331

REEKPORTS.

	June, 1918	
	POUNDS.	£
Crude rubber.		
From—		
London	1,814,700	222,849
Liverpool	372,500	38,405
Totals	2,187,200	261,254
Waste and reclaimed rubber:		
From—		
Liverpool	22,400	600

UNITED KINGDOM RUBBER STATISTICS.

The import and export figures by countries usually published in this table are withheld by the British Government.

IMPORTS.

	July, 1918.	
	POUNDS.	£
Crude rubber	\$668,100	963,542
Waste and reclaimed rubber	2,200	25
Gutta percha	308,256	73,743
Totals	9,178,556	1,037,310
MANUFACTURED		
Boots and shoes, <i>each pair</i>	211	2,435
Automobile tires and tubes	24,712	2,471
Bicycle tires and tubes	1,510	1,510
Totals	26,433	30,457

EXPORTS.

	July, 1918.	
	POUNDS.	£
Waste and reclaimed rubber	782,800	17,247
MANUFACTURED		
Waterproof clothing	40,762	40,762
Boots and shoes, <i>each pair</i>	9,715	9,715
Insulated wire	4,113	4,113
Automobile tires and tubes	92,326	92,326
Motorcycle tires and tubes	31,035	31,035
Bicycle tires and tubes	18,515	18,515
Tires not specified	12,770	12,770
Other manufactures of india rubber	124,558	124,558
Total	339,186	339,186

EXPORTS—FOREIGN AND COLONIAL.

	July, 1918.	
	POUNDS.	£
Crude rubber	2,439,000	266,213
Gutta percha	30,688	3,093
Totals	2,489,688	269,306
MANUFACTURED		
Boots and shoes, <i>each pair</i>	117	257
Insulated wire	357,126	357,126
Automobile tires and tubes	3,338	3,338
Motorcycle tires and tubes	50	50
Bicycle tires and tubes	1,023	1,023
Tires not specified	98	98
Total	4,863	4,863

RUBBER STATISTICS FOR ITALY.

IMPORTS OF CRUDE AND MANUFACTURED RUBBER.

	Two Months Ended February, 1918.	
	POUNDS.	LIRES.
Crude rubber		
From—		
Great Britain	193,600	193,600
India and Ceylon	113,740	113,740
Straits Settlements	185,650	185,650
French West Africa	186,560	186,560
Brazil	249,920	249,920
Other countries	62,480	62,480
Totals	991,980	4,058,100
Reclaimed rubber	36,960	16,800
MANUFACTURED		
India rubber and gutta percha sheets		
From—		
Great Britain	4,180	4,180
United States	5,500	5,500
Totals	9,680	88,000
India rubber and gutta percha sheets		
From—		
Hard rubber	6,640	10,440
India rubber and gutta percha sheets		
From—		
Elastic fabrics	8,580	27,300
Bolting	21,340	77,600
Rubberized fabric—pieces		
For carding combs	8,140	38,025
Other forms		
From—		
Great Britain	440	2,600
Boots and shoes, <i>each pair</i>		
From—		
France	3,310	3,310
United States	192	192
Other countries	184	184
Totals	3,695	25,967
Elastic webbing		
From—		
France	4,620	4,620
Other countries	1,100	1,100
Totals	5,720	44,200

Manufactures of india rubber and gutta percha, n.e.s.		
From cut sheet	220	2,200
Plastic fabrics		
From—		
Great Britain	1,100	1,100
Other countries	1,100	1,100
Totals	2,200	9,500
Tires and tubes		
From—		
France	102,520	102,520
Great Britain	34,980	34,980
Totals	137,500	975,000
Other manufactures		
From—		
Great Britain	188,320	188,320
United States	38,940	38,940
Other countries	22,880	22,880
Totals	250,140	250,140
Totals	910,400	910,400
Total manufactures	6,880,112	6,880,112

EXPORTS OF CRUDE AND MANUFACTURED RUBBER.

Two Months Ended February, 1918.

	POUNDS.		LIRES.	
UNMANUFACTURED				
India rubber and gutta percha—raw and re-laminated				
To—				
United States	128,700	128,700	128,700	128,700
Totals	128,700	128,700	128,700	128,700

MANUFACTURED				
India rubber and gutta percha sheets				
To—				
France	3,960	3,960	3,960	3,960
India rubber and gutta percha sheets				
Cut sheets	1,320	1,320	1,320	1,320
Elastic fabrics	4,400	4,400	4,400	4,400
Other forms, comprising hard rubber	3,960	3,960	3,960	3,960
India rubber and gutta percha sheets				
From—				
Elastic fabric	17,000	17,000	17,000	17,000
Other forms	12,700	12,700	12,700	12,700
Bolting	7,700	7,700	7,700	7,700
Rubberized fabrics—pieces	7,040	7,040	7,040	7,040
Elastic webbing				
To—				
France	220	220	220	220
Greece	12,700	12,700	12,700	12,700
Spain	660	660	660	660
Switzerland	660	660	660	660
Egypt	3,740	3,740	3,740	3,740
Argentina	7,920	7,920	7,920	7,920
Brazil	14,960	14,960	14,960	14,960
Chile	2,860	2,860	2,860	2,860
Cuba	440	440	440	440
Other countries	4,620	4,620	4,620	4,620
Totals	48,840	48,840	48,840	48,840

Manufactures of india rubber and gutta percha, n.e.s.				
From cut sheet				
To—				
Argentina	6,820	6,820	6,820	6,820
Uruguay	660	660	660	660
Other countries	660	660	660	660
Totals	7,920	7,920	7,920	7,920
Elastic fabric	3,740	3,740	3,740	3,740
Tires and tubes				
To—				
France	33,220	33,220	33,220	33,220
Great Britain	213,620	213,620	213,620	213,620
Argentina	880	880	880	880
Brazil	78,760	78,760	78,760	78,760
Other countries	70,180	70,180	70,180	70,180
Totals	396,660	396,660	396,660	396,660

Other manufactures of india rubber:				
To—				
France	15,180	15,180	15,180	15,180
Great Britain	18,920	18,920	18,920	18,920
Spain	1,540	1,540	1,540	1,540
Switzerland	1,540	1,540	1,540	1,540
Egypt	4,620	4,620	4,620	4,620
Argentina	6,380	6,380	6,380	6,380
Brazil	17,600	17,600	17,600	17,600
France	1,760	1,760	1,760	1,760
Other countries	5,940	5,940	5,940	5,940
Totals	80,740	80,740	80,740	80,740
Total exports	3,077,505	3,077,505	3,077,505	3,077,505

EXPORTS OF INDIA RUBBER FROM MANAOS, FROM JANUARY TO JUNE, 1918.

EXPORTERS	NEW YORK.					EUROPE.					GRAND TOTALS.	
	Fine.	Medium.	Coarse.	Caucho.	Totals.	Fine.	Medium.	Coarse.	Caucho.	Totals.	Fine.	Totals.
General Rubber Co. of Brazil, <i>kilos</i>	569,122	101,326	167,961	743,591	1,580,000	84,960	15,040			100,000	1,680,000	1,680,000
Bank of Brazil												
Stowell & Co.	357,126	36,237	86,389	391,377	870,920	81,260	11,200	5,100		97,560	968,500	968,500
I. A. Mendes & Co.	239,341	73,994	204,885	518,220	843,560	80,113	3,360	5,350		88,823	928,383	928,383
Tancredi, Porto & Co.	317,950	39,881	167,016	524,847	1,021,693	20,900	4,800			25,000	792,660	792,660
C. Padellaro & Co.	46,146	10,727	26,777	61,631	145,281	83,104	3,067	1,025		87,196	233,477	233,477
Higson & Fall, Successors	35,983	1,855	9,844	47,682	95,312	37,137	1,378	1,378		40,000	103,587	103,587
J. C. Arago	26,774	1,878	3,190	30,457	67,488	64,604	11,927	8,260		85,261	85,261	85,261
Adelbert H. Alden, Limited	7,007	3,776	2,528	4,846	18,257							
B. Levy & Co.	1,600	400	230		2,230							
F. Eschbach, Successors												
Totals	1,580,000	269,578	673,256	1,874,181	4,338,136	479,368	57,068	23,313	700	556,548	6,135,085	6,135,085
Transit imports	189,426	582,900	112,605	276,080	1,160,011	54,787	47,480	9,470	37,107	149,344	1,311,425	1,311,425
Totals	1,769,426	852,538	785,861	2,150,261	5,498,147	533,675	105,568	32,800	37,876	704,928	7,447,110	7,447,110

Consul General H. Pickrell, Para, Brazil, reports that there were no crude rubber shipments from Para to Europe for the United States during June, 1918.

This amount was shipped to Pará, final destination unknown—and consisted of 1,199,827 kilos of fine, 14,429 kilos medium and 6,654 kilos coarse—sent to St. Paul & Co., Manaus.

EXPORTS OF INDIA RUBBER FROM MANAOS DURING JUNE, 1918.

EXPORTERS.	NEW YORK.	Fine.	Medium.	Coarse.	Caucho.	Totals.
Blank of Brazil.....	8,889	52,532	176,567	337,000		
General Rubber Co. of Brazil.....	88,962			59,803	172,757	
Tanaredo, Porto & Co.....	74,990	11,500	35,864	20,942	101,404	
L. A. Mendes & Co.....	28,444			69,552	69,552	
Stowell & Co.....						
Totals.....	16,283	58,570	78,396	356,804	680,113	
In transit, Imports.....	9,879	7,448	9,846	67,946	94,962	
Totals.....	226,755	65,888	88,232	394,800	775,075	

1,485,246 kilos, consisting of 184,185 kilos fine, 14,429 medium and 6,659 coarse, were shipped to Pará, final destination unknown. Total shipments from Manaus were, therefore, 1,230,321 kilos.
(Compiled by Stowell & Co., Manaus.)

THE MARKET FOR RUBBER SCRAP.

Copyright, 1918.

NEW YORK.

THERE was a little more life in the rubber scrap market this past month than the one previous, one reason being the greater interest shown by the manufacturers in reclaimed rubber. The new regulations governing October-December rubber imports are practically the same, as far as tonnage is concerned, as during the last quarter. There is no doubt that, sooner or later, the available supply of rubber scrap will be drawn upon for emergency purposes.

BOOTS AND SHOES.—A small demand was noted in some quarters that was supplied at 8½ cents, although 8½ cents has been firmly quoted to reclaimers.

INNER TUBES.—The situation appears to be dormant and consumers have not shown interest of any sort in this market.

MECHANICALS.—These grades are in small demand, the movement being almost negligible, and prices unchanged.

TIRES.—The call has been hardly noticeable and for the most part limited to occasional lots of standard white tires. Prices are lower.

NEW YORK QUOTATIONS FOR CARLOAD LOTS DELIVERED.

SEPTEMBER 26, 1918.

Prices subject to change without notice.

BOOTS AND SHOES.			
Arctic tops.....	lb.	\$0.01½ @	.01½
Boots and shoes.....	lb.	.08½ @	.08½
Trimmed arctics.....	lb.	.07 @	.07½
Untrimmed arctics.....	lb.	.06 @	.06½
HARD RUBBER.			
Battery jars, black compound.....	lb.	.02 @	
No. 1, brick fracture.....	lb.	.25 @	.26
INNER TUBES.			
No. 1, old packing.....	lb.	.22 @	.22½
new packing.....	lb.	.24 @	.24½
No. 2.....	lb.	.11½ @	.11½
Red.....	lb.	.11½ @	.11½
MECHANICALS.			
Black scrap, mixed, No. 1.....	lb.	.05¼ @	
No. 2.....	lb.	.04 @	
Car springs.....	lb.	.05 @	
Beels.....	lb.	.05 @	
Horse-shoe pads.....	lb.	.04 @	
Hose, air-brake.....	lb.	.05½ @	.05½
fire, cotton lined.....	lb.	.02½ @	
garden.....	lb.	.02½ @	
Insulated wire stripping, free from fiber.....	lb.	.04½ @	
Mating.....	lb.	.01½ @	
Packing.....	lb.	.01½ @	
Red scrap, No. 1.....	lb.	.09½ @	.10
No. 2.....	lb.	.06 @	.06½
White scrap.....	lb.	.12 @	.12½
No. 2.....	lb.	.09 @	
TIRES.			
Pneumatic—			
Auto peelings, No. 1.....	lb.	.09½ @	
No. 2.....	lb.	.06½ @	.06½
Bicycle.....	lb.	.04¾ @	
Standard white auto.....	lb.	.05 @	
Standard mixed auto.....	lb.	.04¾ @	.04¾
Striped, unguaranteed.....	lb.	.04¾ @	
White, G. & W.....	lb.	.05 @	
M. & W. and U. S.....	lb.	.05 @	
Solid—			
Carriage.....	lb.	.05¼ @	
Iron.....	lb.	.02 @	
Truck.....	lb.	.05½ @	.05½

THE MARKET FOR COTTON AND OTHER FABRICS.

Copyright, 1918.

NEW YORK.

WITH the announcement from Washington, on September 14, that the Government proposed to fix cotton prices, the market broke suddenly and prices declined 120 to 140 points, an equivalent of \$6 to \$7 per bale. As the month progressed, the market recovered and assumed an upward tendency, due to favorable crop estimates and the appointment by the Government of price control committees who had the confidence of the trade. A month ago middling spot cotton was 37.30 cents, and on September 27 the quotation was 35.15 cents, the strength of the market being due to favorable news from the front.

The committee has announced that the price of raw cotton will not be fixed immediately and that sufficient time will be allowed to assign to test the effect as a stabilizing influence of the work assigned to the Committee on Cotton Distribution.

EGYPTIAN COTTON.—When the War Trade Board limited Egyptian cotton imports to 80,000 bales a year, and about 60,000 bales had already come in, there were 18,000 bales allocated to various importers. It now appears that this cotton has not been sold, indicating that the demand has fallen off about equally with the reduction of imports. It is well known that many tire manufacturers were forced to use combed Peellers and are continuing to do so, which accounts for a large amount of Egyptian cotton being released for other purposes.

SEA ISLAND COTTON.—It is rumored that holders are trying to artificially maintain prices by withholding supplies. Average extra choice sells for 70 to 73 cents landed at New England mill points. Egyptian Sakellarides can be delivered for about 10 to 13 cents less, but is uncertain of shipment, which accounts for the premium on Sea Island.

COTTON FABRICS.—The Price Fixing Committee of the War Industries Board has postponed the revision of prices on cotton fabrics until November 16. In readjusting certain parities, however, to make them conform more nearly to their basic relations, the following changes were made in maximum prices, taking effect October 1, 1918, and subject to revision, with other cotton products, on November 16, 1918:

Wide and sail duck, 37½ per cent discount from standard list. Standard army duck, 31½ per cent discount from standard list. Hose and belting duck, 62½ cents per pound. Ten ounce hose duck, 64½ cents per pound. Class A, 28½ cents per yard, card basis. Class B, 28 cents per yard, card basis. Class C, 27½ cents per yard, card basis.

These classifications are described as follows:

Class A—To be duck made of white cotton without waste or strips, and counting not under 80 by 28. Also, qualities equal to Magnolia and Lindale to be in this class.

Class B—To be duck of all clean cotton, and counting not under 72 by 28. This class is recognized as the standard grade of single filling duck.

Class C—To be duck made to count not under 72 by 28, and containing not over 25 per cent of waste or strips.

Double filling duck:

Class A—Counting not under 80 by 28, 30½ cents per yard, card basis.

Class B—Counting not under 72 by 28, 30 cents per yard, card basis.

NEW YORK QUOTATIONS.

SEPTEMBER 26, 1918.

Prices subject to change without notice.

AIRPLANE AND BALLOON FABRICS:			
Wamsutta, S. A. I. L. No. 1, 40-inch.....	yard		None
No. 4, 38½-inch.....	yard	\$9.45	@
ASBESTOS CLOTH:			
Brake lining, 2½ lbs. sq. yd., brass or copper insertion.....	lb.	.85	@
2½ lbs. sq. yd., brass or copper insertion.....	lb.	.90	@

BURLAPS:

32—7-ounce	100 yards	*17.15	@
40—7½-ounce		*18.35	@
40—8-ounce		*18.60	@
40—10-ounce		*23.75	@
40—10½-ounce		*24.00	@
45—7½-ounce		*21.75	@
45—8-ounce		*22.00	@
45—9½-ounce		*27.75	@
48—10-ounce		*35.00	@

DRILLS:

38-inch 2.00-yard	yard	.30½	@
40-inch 2.47-yard		.25½	@
53-inch 1.90-yard		.32½	@
52-inch 1.95-yard		.32¼	@
62-inch 1.52-yard		*.58	@

DUCK:**CARRIAGE CLOTH:**

38-inch 2.00-yard enameling duck	yard	.31	@
38-inch 1.74-yard		*.35	@
72-inch 16.66-ounce		*.64	@
72-inch 17.21-ounce		*.69½	@

MECHANICAL:

Hose	hundred	.62¼	@
40-inch, 10-ounce		.64¼	@
Belt		.62¾	@

HOLLANDS, 40-INCH:

Acme	yard	.30	@
Endurance	yard	.33	@
Penn	yard	.34	@

OSNABURGS:

40-inch 2.35-yard	yard	.25½ @	.26¼
40-inch 2.48-yard		.24¼ @	.25¼
37½-inch 2.42-yard		.24¼ @	.26

TIRE FABRICS

JENCKES SPINNING COMPANY

PAWTUCKET RHODE ISLAND

RAINCOAT FABRICS:**COTTON:**

Bombazine 64 x 60 water repellent	yard	*.23	@
60 x 48 not water repellent		*.20½	@
Cashmeres, cotton and wool, 36-inch		.75	@
blue and black		.90	@
Oxford		.67½	@
Twills 64 x 72		*.35	@
64 x 102		*.35	@
Twill, mercerized, 36-inch, tan and olive		.34½	@
blue and black		.35½	@
Tweed		.50	@
Tweed, printed		.23	@
Plaids 60 x 48		*.20½	@
36 x 48		*.20½	@
Repp		.35	@
Surface prints 60 x 48		*.21½	@
64 x 60		*.23½	@

IMPORTED WOOLLEN FABRICS SPECIALLY PREPARED FOR RUBBERIZING**—PLAIN AND FANCIES:**

63-inch, 3½ to 7½ ounces	yard	1.10	@ 2.90
36-inch, 2¾ to 5 ounces		.80	@ 1.80

IMPORTED PLAID LINING (UNION AND COTTON):

63-inch, 2 to 4 ounces	yard	.90	@ 1.60
36-inch, 2 to 4 ounces		.52½	@ 1.05

DOMESTIC WORSTED FABRICS:

36-inch, 4½ to 8 ounces	yard	.70	@ 1.70
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DOMESTIC WOVEN PLAD LININGS (COTTON):

36-inch, 3¾ to 5 ounces	yard	.27½	@ .50
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SHEETINGS:

40-inch 2.35-yard	yard	*.28¼	@
40-inch 2.50-yard		*.27½	@
40-inch 2.70-yard		*.24½	@
40-inch 2.85-yard		*.21¼	@
40-inch 3.15-yard		*.22¾	@
40-inch 3.60-yard		*.19¼	@

JACKET:

Delaware	yard	.30	@
Schuykill	yard	.35	@

SILKS:

Canton, 38-inch	yard	.35½	@
Schappe, 36-inch		.52½	@

STOCKINETTES:**COTTON, 52-INCH:**

D—14-ounce	yard	*.85	@ .90
E—11½-ounce		*.60	@ .65
F—14-ounce		*.85	@ .90
G—8-ounce		*.75	@ .80
H—11-ounce		*.70	@ .85
I—9-ounce		*.60	@ .65
Knitback	hundred	*1.75	@ 2.00

WOOL, 52-INCH:

A—14-ounce	yard	*1.75	@
B—14-ounce		*2.25	@
C—14-ounce		*2.50	@

TIRE FABRICS:

17½-ounce Sea Island, combed	square yard	1.60	@ 1.70
17½-ounce Egyptian, combed		1.30	@ 1.40
17½-ounce Egyptian, carded		1.20	@ 1.30
17½-ounce Peeler, combed		1.10	@ 1.15
17½-ounce Peeler, carded		1.00	@ 1.05

*Nominal.

SEA ISLAND CROP 1917-1918.

	Receipts 1917-	Receipts 1916-1917.
Stock on hand, August 1, 1917—Savannah, 1,043; Charles- ton, 1	1,044	2,508
Received at Savannah (net)	32,022	47,499
Received at Charleston (net)	4,971	3,495
Received at Jacksonville (net)	40,146	43,080
Received at Brunswick (net)	300	—
Received at Norfolk (net)	—	1,914
Received at interior points and shipped direct to southern mills	7,856	17,121
Less Total Exports	88,339	115,617
Stock, July 31, 1918—Savannah, 15,247; Charleston, 517; Jacksonville, 10,016	62,559	114,573
Crop grown according to final ginners' report	25,780	1,044
	92,501	117,544

EXPORTS AND RESHIPMENTS, 1917-1918.

From—	Great Britain.	Continental.	Reshipments to—		Totals.
			Foreign Ports and	Counted	
			Mills.	Mills.	
Savannah ...	427	14	15,253	2,164	17,411
Charleston ...			4,019	1,390	5,409
Jacksonville ...			3,418		30,408
Brunswick ...	108				300
Interior points ...				7,856	7,856
Less cotton counted twice ...	727	142	50,280	11,410	62,559
	727	142	50,280	11,410	62,559

COMPARATIVE STATEMENT OF EXPORTS FOR PAST SIX YEARS.

	1912	1913	1914	1915	1916	1917
Great Britain ... bales	10,914	11,174	1,922	1,667	1,423	727
Continent ...	5,161	4,833	1,991	1,060	173	142
Domestic, northern mills ...	29,451	67,626	60,879	60,822	88,496	30,280
Domestic, southern mills ...	10,492	14,427	15,409	21,697	24,367	11,410
Burned ...					114	

ACCELERATORS, INORGANIC.

Lead, dry red ...	11.50	@
sublimed lead ...	09.75	@
white, basic carbonate ...	09.75	@
white, basic sulphate ...	10	@
Lime, best ...	02.00	@
Litharge, domestic ...	10.00	@
English ...	11	@
sublimed ...	12	@
Magnesium sulphate ...	11	@
calcined, heavy ...	12	@
calcined, light (Munich brand) ...	30	@
Magnesium oxide ...	06.50	@
Magnesite, calcined, powdered ...	65.00	@

ACIDS.

Acetic, 8 per cent, (bals.) ...	01	@
Glacial, 98 per cent, (carbonyl) ...	05	@
Cresylic, 97-99 per cent, straw color ...	1.12	@
Muriatic, 30 degrees ...	1.00	@
Nitric, 36 degrees ...	02.34	@
Sulphuric, 66 degrees ...	2.35	@

ALKALIES.

Caustic soda, 76 per cent, ground ...	08	@
Soda ash, light, 58 per cent in bags ...	04	@

COLORS.

Black:		
Bone, powdered ...	05	@
granulated ...	09	@
Carbon, black (sacks, factory) ...	14	@
Iron, black ...	16	@
Lampblack ...	15	@
Oil soluble aniline ...	07.50	@
Rubber black ...	06	@
Blue:		
Cobalt ...	35	@
Prussian ...	1.35	@
Ultramarine ...	18	@
Brown:		
Iron oxide ...	03	@
Ochre, domestic ...	03	@
imported ...	06	@
Sienna, raw and burnt ...	05.50	@
Umber, raw and burnt ...	05.50	@
Green:		
Chrome tile ...	15	@
Oxide of chromium (casks) ...	85	@
India rubber ...	75	@
Red:		
Antimony, crimson, sulphuret of (casks) ...	30	@
crimson, "Mephisto" (casks) ...	50	@
Antimony, golden, sulphuret of ...	25	@
golden, "Mephisto" (casks) ...	30	@
golden, sulphuret of (States brand, 16-17 lb.) ...	28	@
red sulphuret, States brand ...	25	@
vermillion sulphuret ...	55	@
Arsenic, red sulphide ...	45	@
Iron oxide, pure bright ...	08	@
Iron oxide, reduced grades ...	12	@
pure light ...	15	@
Oil soluble aniline, red ...	2.50	@
orange ...	2.00	@
Oxymony ...	18	@
Venetian ...	02.14	@
Vermilion, English, pale, medium, dark ...	2.00	@

White:		
Aluminum bronze powder ...	80	@
Lithopone, imported ...	08	@
domestic ...	08	@
Ponolith (carloads, factory) ...	07.75	@
Rubber makers' white ...	08	@
Zinc oxide, Horsehead (less carload, E. O. B. factory) ...	08	@
"XX red" ...	10.50	@
"Special" ...	11	@
French process, red seal ...	13.50	@
green seal ...	13.50	@
white seal ...	14.50	@
(States brand) ...	10.50	@
Zinc sulphide, pure ...	Nemo	

COMPARATIVE STATEMENT OF CROP GROWN FOR PAST SIX YEARS.

	1912	1913	1914	1915	1916	1917
South Carolina ... bales	8,373	8,670	5,590	6,178	3,486	7,313
Georgia and Florida ...	65,266	68,820	76,008	85,742	114,058	85,188
	73,641	77,490	81,598	91,920	117,544	92,501

(Compiled by John Malloch & Co., Savannah, Georgia.)

THE MARKET FOR CHEMICALS AND COMPOUNDING INGREDIENTS.

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NEW YORK.

THE Market on the base metals has been steady and strong. The Lead Producers' Committee has assumed complete control on lead by request of The War Industries Board. This amounts to governmental fixing of the price.

There is considerable demand for tin with little available to sell.

The price for copper after November 1 is a matter of speculation, depending on the sufficiency of the supply needed to fill the war demands.

CAUSTIC SODA.—Prices have not yet been fixed by government authority. The war needs require practically one-quarter of the country's production in the production of cleaners and explosives.

BARYTES.—Southern producers consider an advance in price inevitable in the near future owing to increased cost of production.

LITHOPONE has been advanced for carload lots for the last quarter of this year. The spot market is 8½ cents per pound. In anticipation of more restrictions by the Government, pigment manufacturers look for standardization and discontinuance of special brands.

ZINC OXIDE is in large demand and no increase of price is asked for the last quarter of the year.

SOLVENTS.—The country's stock of gasoline is said to be reduced to two or three weeks' supply, the amount consumed in September being of record proportions to be exceeded, no doubt, by the war demands of next Spring. The shortage will be serious for the rubber trade catering to civilian uses, with little prospect of relief through use of other solvents.

Presidential control of raw materials authorized by a recently enacted bill will affect rubber manufacturers as to supply of several rubber compounding ingredients in common use, such as antimony and magnesia products, chalk, fuller's earth, kaolin, graphite, mica and sulphur.

NEW YORK QUOTATIONS.

SEPTEMBER 26, 1918.

PRICES SUBJECT TO CHANGE WITHOUT NOTICE.

ACCELERATORS, ORGANIC.

Accelerator No. 1 ...	30	@
Accelerator No. 2 ...	5.62	@
Accelerator No. 3 ...	8.80	@
Accelerator No. 4 ...	5.60	@
Accelerator No. 5 ...	1.00	@
Accelerator No. 6 ...	29	@
Accelerator No. 7 ...	1.25	@
Accelerator No. 8 ...	75	@
Accelerator No. 9 ...	85	@
Accelerator No. 10 ...	1.05	@
Hexamethylenexamine (Vitalin) ...	1.05	@
Hexamethylenexamine (Vitalin) ...	3.00	@
Hexamethylenexamine (Vitalin) ...	3.00	@
Hexamethylenexamine (Vitalin) ...	5.50	@
Hexamethylenexamine (Vitalin) ...	5.50	@
Hexamethylenexamine (Vitalin) ...	65	@

Yellow:

Cadmium, tri-sulphate	lb.	2.68	@	
Chrome, light and medium	lb.	2.00	@	
India rubber	lb.	1.00	@	.32
Ochre, light or dark	lb.	*.02 1/2	@	
Oil soluble aniline	lb.	*.09	@	
Zinc chromate	lb.	*.50	@	

COMPOUNDING INGREDIENTS.

Aluminum flake (bbls. factory. Less 5% carload)	ton	29.00	@	
Aluminum flake (casks factory. Less 5% carloads)	ton	26.00	@	
Aluminum oxide	lb.	*.18	@	
Ammonia carbonate, powdered	lb.	.14	@	.14 1/2
Asbestos (bags)	ton	*.22 50	@	25.00
Asbestos (bags)	ton	*.25 00	@	35.00
Barium, carbonate, precipitated	ton	65.00	@	
Carbon, black, precipitated	lb.	.08 1/2	@	.09
Barytes, pure white	ton	33.00	@	
off color	ton	23.00	@	28.00
uniform colored (f. o. b. factory)	ton	110.00	@	
Basofo	ton	110.00	@	
Blanc fixe	lb.	.05 1/2	@	.06
Bone ash	lb.	.06	@	
Chalk, precipitated, extra light	lb.	.05	@	.05 1/4
precipitated, heavy	lb.	.04	@	.04 1/2
China clay, domestic	lb.	15.00	@	25.00
Cotton linters, clean mill run, f. o. b. factory	bale	*4.67	@	
Fossil flour	ton	60.00	@	
Glycer, high grade	lb.	.40	@	.50
medium	lb.	.25	@	.35
low grade	lb.	.14	@	.20
Graphite, flake (400 pound bbl)	lb.	.10	@	.25
amorphous	lb.	.04	@	.08
Ground glass FF. (bbls.)	lb.	.03	@	
Infusorial earth, powdered	ton	60.00	@	
bolted	ton	65.00	@	
Mica, powdered	lb.	.03 1/2	@	.06
Plasticum	lb.	.15	@	
Pumice stone, powdered (bbl.)	lb.	.04	@	.08
Pumice stone, powdered	lb.	.05 1/2	@	.04 1/2
Rubber floss	lb.	.15	@	
Rubidite	lb.	*.38	@	
Silica (silica)	ton	23.00	@	40.00
Silicate, powdered, domestic	ton	15.00	@	25.00
imported	ton	65.00	@	80.00
Starch, powdered corn (carload, basic)	ton	50.00	@	
Talc, American	ton	20.00	@	40.00
French	ton	65.00	@	80.00
Tripoli earth, bolted	ton	60.00	@	
Typo lith	ton	*5.00	@	
Waxed rubber blocks	ton	90.00	@	1.00
Whiting, Alka (carloads)	ton	1.00	@	
commercial	ton	1.00	@	1.35
galliers	ton	1.50	@	1.75
Paris, white, American	ton	1.75	@	2.75
English clistite	ton	40.00	@	45.00
Wood pulp XXX	ton	40.00	@	

MINERAL RUBBER.

Gilsonite	ton	55.00	@	
Richmond Brand	ton	55.00	@	57.00
M. R.	ton	65.00	@	
M. R. X	ton	100.00	@	
Liquid rubber	lb.	1.14	@	.15
Pioneer, carload, delivered	ton	54.00	@	
less carload, factory	ton	60.00	@	
Richmond Brand	ton	75.00	@	
No. 64 Brand	ton	65.00	@	
Reinforced Elatrite	ton	175.00	@	
Raven M. R.	ton	50.00	@	70.00

OILS.

Corn, crude	lb.	.18	@	
refined	lb.	.21	@	
Glycerine (C. P. domestic)	lb.	.61	@	.62
Glycerole	lb.	.18	@	
Linseed, raw (barrels)	gal.	1.80	@	1.90
linseed compound	gal.	1.00	@	
Palm	lb.	.18	@	
Paraffin	gal.	*.27	@	
Petrolatum	gal.	.00 1/2	@	
Petroleum grease	gal.	.06 1/2	@	
Pine, steam distilled	gal.	*.55	@	
Rapeseed, refined	gal.	1.75	@	
Basin	lb.	.25	@	.92
Soya bean, crude	lb.	.18	@	
Tar (Guibet)	gal.	.35	@	.37

SOLVENTS.

Acetone (domestic)	lb.	.25 1/2	@	.30
substitute (drums)	gal.	2.00	@	
Benzol, 99 per cent.	gal.	1.00	@	.27
Benzocapitol, technical	lb.	.70	@	
ordinary grade	lb.	.30	@	
Halowax No. 1000 (f. o. b. Wyandotte)	lb.	.35	@	
No. 1000 (f. o. b. Wyandotte)	lb.	.35	@	

Naphtha, motor gasoline (steel bbls.)	gal.	.24 1/2	@	
73 @ 76 degrees (steel bbls.)	gal.	None	@	
68 @ 70 degrees (steel bbls.)	gal.	None	@	
V. M. & P. (steel bbls.)	gal.	.23 1/2	@	
Toluol, pure	gal.	1.15	@	
Turpentine, spirit	gal.	.66	@	
wood	gal.	.57	@	.63
Venezian	gal.	.65	@	.66
Wassermann	gal.	.35	@	.38
Zylo, pure	gal.	.45	@	.50
commercial	gal.	.30	@	.35

SUBSTITUTES.

Black	lb.	.11	@	.18
White	lb.	.13	@	.25
Brown	lb.	.18	@	.24
Brown factice	lb.	.10	@	.33
White factice	lb.	.14	@	.25
Cordex	lb.	.45	@	
Energine	lb.	.30	@	
Paragol soft and medium (carloads)	crut.	17.08	@	
hard	crut.	16.58	@	
Toughite	lb.	.40	@	

VULCANIZING INGREDIENTS.

Carbon, bisulphide (drums)	lb.	.08 1/2	@	.10
tereb. bisulphide (drums)	lb.	.09	@	.30
Lead, black hyacinthine (Black Hypo)	lb.	None	@	
Orange mineral, domestic	lb.	.14 1/2	@	.08
Sulphur chloride (drums)	lb.	.07 1/2	@	.08
Sulphur, flour	crut.	3.90	@	
pure (steel bbls.)	crut.	3.95	@	

(See also Colors—Antimony)

RESINS AND PITCHES.

Castella gum	lb.	.55	@	
Pine tar, retort	gal.	*.28	@	
lign	gal.	*.35	@	
Pitch, Burgundy	lb.	.07	@	
coal tar	lb.	.04 1/2	@	
pure tar	lb.	.00 1/2	@	
pena	lb.	*.12	@	
Resin, Pontianak, refined	lb.	None	@	
unrefined	lb.	None	@	
fused	lb.	None	@	
Rosin, K.	lb.	*.04 1/2	@	
Sphale, fine orange	lb.	.75	@	.80
Tar, kiln	bbl.	*13.00	@	

WAXES.

Wax, beeswax, white	lb.	.63	@	.65
ceresin, white	lb.	.18	@	.19
caruba	lb.	*.70	@	.73
cokerite	lb.	.78	@	.80
green	lb.	*.78	@	.80
montan	lb.	*.40	@	
substitute	lb.	.23	@	.25
paraffin, crude 118/120 m. p. (cases)	lb.	.13	@	
123/125 m. p. (cases)	lb.	.13 1/2	@	
128/130 m. p. (cases)	lb.	.11	@	
133/136 m. p. (cases)	lb.	None	@	

*Nominal

THE MAAS LATEX CUP.

A new latex cup which, it is claimed, does not retain rain-water, has been invented by Mr. Maas of the General Experiment Station of the A. V. R. O. S. (East Coast of Sumatra Rubber Planters' Association).

The cup consists of two parts: (1) the cup proper, which is of the usual type, but has a small piece of the rim cut out, by way of overflow; (2) a piece of metal—aluminum, tin or zinc, bent to resemble half a funnel, and provided with two ears by means of which it is adjusted to the cup in front of the overflow.

The cup is placed in such a way that the funnel-shaped opening is immediately under the tapping channel, so that the issuing latex enters the cup by the funnel. In case of rain, the water dripping from the trunk will enter the cup in the same way, and will continue to flow into the cup until the level on both sides of the funnel has risen to the overflow, when the rain-water will escape by this opening. The difference in specific gravity of water and latex will cause the latter, which is the lighter fluid and is separated from the overflow by means of the funnel wall, to remain in the cup.

Owing to the dry weather prevailing, no extensive experiment has been possible, but trial on a small scale with a simulated shower proved entirely satisfactory.



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and Tests of all kinds on goods made
cation. Tensile strength, heating, plas-
separation, etc. Besides experimental

ERICK J. MAYWALD, F.C.S.
ater Street NEW YORK
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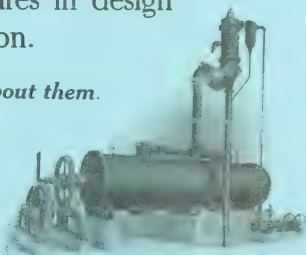


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TABLE OF CONTENTS ON LAST PAGE OF READING.**FROM PLANTATION TO FACTORY DIRECT.**

MR. VAN DER MARK, addressing the Society of Rubber Planters at Batavia, Java, thus pictures the interests of planters and manufacturers:

In the past, when Europe was the greatest consumer of our product and the world trade was centered in England, it was inevitable that all producers were drawn to London. Circumstances, however, have made vast changes, many even now uncalculable, and America is to-day the greatest consumer. In all probability the United States will keep the advantageous position gained through the war and may be expected to improve on it. This being the case, and we see no reason for doubt, the European market for our product will be principally a transito market.

Any transito market between producers and consumers is, in principle, expensive and unnecessary. It is to the interest of producers and manufacturers to eliminate all unnecessary links in the chain that binds them together, especially, whenever a direct contact becomes possible. The long, long way from the East through the West to the East again is simply of interest and advantage to the transito trade and middlemen always profit at the expense of producers and manufacturers. We have reason to believe that the revival of trade between us and Japan, America, and Australia will not

be temporary but from the nature of things permanent and growing.

We rubber planters will cease to be dependent on Europe.

Evidences, plain and numerous, are at hand that a trade and center has been created which will carry weight and will continue to develop itself. This development will be healthy, not artificial, and opposition from elsewhere will be powerless to retard it. The difficulties confronting us will call forth higher energy and make us and our position stronger. All over the Indies preparations are being made to meet the changed circumstances, and for us rubber planters the time has come to obtain that position to which we have lawful title. It is our duty, gentlemen, to prepare the way and courageously attack self-interest and prejudice. We must get rid of our attachment to the old ruts to which the past has accustomed us, and break a new way, strong and powerful, for the attainment of higher aims.

The great interest we planters at Batavia have in coming into direct contact with our buyers, who are mostly all representing the manufacturer, cannot be overestimated. If Batavia becomes a prime market, you will meet the buyer personally, you can obtain information on many points at first hand, and you will in a short time become familiar with all his demands and qualifications. The buyer, on the other hand, will be able to visit your plantation and his cooperation will exercise an influence the results of which will be of utmost benefit to you.

As an instance of the great advantage of direct contact, I may mention the personal instructions given me by one of the largest purchasers of rubber at Batavia, which buys directly for the American manufacturers. The letter was in relation to the desire of the American Government to save tonnage by baling the rubber instead of following the old method of packing. The directions given in the letter and later explained and elucidated in conversation were so minute in all particulars that not a hitch occurred, and certainly to be able to get matters of this kind at first hand is of the greatest importance to planters.

This is only one instance showing conclusively what great interest you have in eliminating Europe and establishing directly your connections with your largest buyers.

RUBBER GOODS IN ENGLAND.

WHILE, on account of the war, the demand for a great many manufactured articles has decreased, the dismal prophecies made for the sporting goods trade have not been fulfilled. It was said that the small number of sportsmen left at home would be unable to take up much of the equipment on hand and traders felt serious apprehension when looking at their generously stocked shelves. But the woman chauffeur, conductor, letter-carrier, farmer and ammunition maker was followed by the woman sportsman with her cricket clubs, the forming of which was encouraged in many instances by the big firms and companies as a part of their welfare work. The women and the boys under 18 whose wages far exceed the pre-war earnings and who, therefore, are able and

willing to pay the higher prices, have made this year's business decidedly an excellent one.

The dealers in rubber toys, however, are unable to get much-needed supplies, and yet there is nothing to replace the goods that used to come from Germany. Colored balls, especially, would command stiff prices, but they are not to be obtained.

Leather used for soles in footwear is more and more being replaced by rubber to the great satisfaction of the wearer. One does not hear any more the old complaint: "The soles don't last." On the contrary, people begin to ask: "Will the upper last as long as the sole?"

The plans of the Government for manufacturing artificial limbs on an extensive scale are also contributing to the improvement and stimulation of a portion of the rubber trade. In other fields, notably in that part of the bicycle supply trade concerned with covers, tubes, etc., there is serious fear of an approaching shortage.

As to the tennis shoes and other light footwear, large quantities could be sold if they were available, but the outlook for increasing supplies is far from encouraging. Generally, rubber manufacturers are too busy with war necessities to handle other trades.

PICKING ON PONTIANAK.

ANDREW H. KING, who writes interestingly and often for "Chemical and Metallurgical Engineering," gives some surprising information concerning Pontianak in the August issue of that excellent journal. To avoid error we quote:

The supply of Pontianak is to-day almost exhausted. This is due solely to the wasteful and extremely primitive methods used by the natives in securing the gum. Where they might have tapped the trees and built up a steady business they felled and bled them at many different points. The method produced quick results but the procedure reminds one of the old fable about killing the goose that laid the golden egg. In 1909 a good grade of Ponti could be secured at 5 cents per pound. The market price is now around 30 cents per pound, making Ponti no longer a profitable purchase.

Did we say to avoid error? Accurately, it should be to correct errors.

The fact is that few Pontianak trees (*Dyera costulata*) are destroyed by native gatherers. The British and Dutch authorities long ago stopped all that. As for the supply being exhausted, the United States received 23,000,000 pounds in 1917. Schidrowitz figured that there were 160,000,000 pounds in Sarawak, the Dutch East Indies and the Federated Malay States. More than that amount has already been consumed, and Pontianak still arrives, or would if it were not war-time.

As for the price being around 30 cents per pound, with all respect, that seems high. Taking Bandjer-massin as a typical grade, its average price for 1917 was 13 cents per pound; for the first eight months in

1918 it was 14 cents per pound. Mr. King's broker overcharged him.

"COMMERCIAL CAMOUFLAGE."

GERMAN rubber goods after the war are likely to bear American, English, French, Swedish or any trade-marks other than German. This is stated by the "Economic Gazette" of the Central Powers which thus advises German exporters:

After the war German trade will be possible only through neutral countries. All marks of German origin will, therefore, have to be obliterated from all wares exported. Considerations of international morality must be brushed aside.

It will be a very long-handled brush that will enable the German to get within reach of morality of any sort.

FISH-SCALE RUBBER.

THE inventor of fish-scale rubber, unless he be a very modest man, is likely to be dazzled by the bright light of publicity thrown upon him by "The Scientific American" and "The Literary Digest." Mention in such high-class publications is likely to cause him to add at least \$1,000,000 to the asking price for the usual half interest. As a friend to all who strive to add to the world's supply of rubber whether it be natural or artificial, plantation or synthetic, we trust he will keep his head. Success in making rubber from fish-scales is but a beginning and he owes it to the world that he continue. It is evident that rubber made from the scales of the tender minnow will show neither the tensile strength or the resilience shown by that made from the fighting tarpon. He should, therefore, establish grades of fish scale rubber. Furthermore, as the pioneer scalyoptomist it is his duty to exploit scales to the uttermost. Fish are not the only scalebearers. Scales are abundantly found on bird and beast, at present waste material, perhaps recoverable, possibly rubbery. Then as a last resort come scalene triangles and the chromatic scale.

THE FACT THAT ONE IS AN EXPERT IN THE SALE OR use of a commodity does not prove complete knowledge of it. As an instance in point one of the old-time big operators in Caucho always sold it as "Cow chow," suggesting mixed pickles. This leads to the query as to whether the word "Joolatong" for Jelutong is not from a source, able commercially, but of indifferent philological attainments.

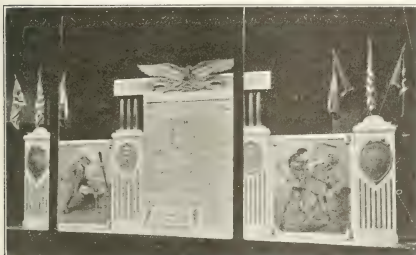
SEVERAL MONTHS AGO THE WAR DEPARTMENT authorized the statement that American gas masks were effective against all German gases. Major H. W. Duffy, of the British-American gas service, now declares that the fumes of American gas shells penetrate even the most modern of German masks. Apparently we have worsted the Hun at his own game both going and coming.

War News of the Rubber Industry.

The Fourth Liberty Loan. The Fourth Liberty Loan in Greater New York. Liberty Loan Publicity by the Rubber Industry. The Liberty Loan in Massachusetts. Government Officials in Charge of Rubber Matters. Quartermaster's Department Orders 1,305,680 Pairs of Rubber Boots. Limited Cargo Space for Exports to Russia. The Government Requests Nut-shells for Gas-mask Carbon. Details of Rubber Button Manufacture. The Bicycle Is Coming Back. Waterproof Garments Seized by the Government. Service Notes and Personals. Martyrs to the Cause of Liberty. Letters from the Front. New General License Does Not Affect Rubber. Procedure Governing Exports to Sweden.

THE FOURTH LIBERTY LOAN.

Final official totals of the Fourth Liberty Loan are not yet available, but Treasury Department estimates indicate that the 22,000,000 or more individual subscriptions will probably aggregate some \$250,000,000 in excess of the \$6,000,000,000 set as the amount of the loan. This result, coming as it has at a time when Allied victories everywhere and the peace overtures of the Central Powers are engaging the thought of the world, and when the epidemic of so-called Spanish influenza has discouraged pub-



THE GOODRICH COMPANY'S NEW YORK CITY WINDOW DISPLAY.

lic gatherings in many of the eastern states and in several cities closed theatres, churches, halls and schools throughout the drive, indicates more clearly than has any other loan the high resolve, united purpose, and inflexible determination of the American people that the world shall have freedom, justice, and an end of decisions by the sword. Most communities throughout the country "went over the top" with their quotas, and the rubber manufacturing centers are among those proudly flying their honor flags. The rubber industry as a whole took up its share of the task with the same whole-hearted spirit that has characterized its previous efforts, and to the generosity and enthusiasm of rubber companies, officials and employees alike, is due in no small measure the notable results achieved in New York, Ohio, New England, New Jersey, Pennsylvania, Illinois and elsewhere.

THE FOURTH LIBERTY LOAN IN GREATER NEW YORK.

The rubber industry of Greater New York demonstrated its belief in Liberty's cause by a subscription of \$10,775,050 to the Fourth Liberty Loan.

The success of this campaign is largely due to the organization created by the Liberty Loan Committee of the Rubber Industry comprising a Central Committee and Divisions, representing branches of the rubber industry. The following is a list of the total subscriptions and the accredited divisions:

TOTAL SUBSCRIPTIONS.

TIRE DIVISION.

New York City	\$5,832,018	
Brooklyn. By New York Committee.....	15,350	
Coupon books	90,850	\$5,938,218

CRUDE RUBBER.

New York City	1,266,800	
Brooklyn. By New York Committee.....	5,700	
Coupon books	1,450	1,273,950

BOOTS AND SHOES.

New York City	883,016	
Brooklyn. By New York Committee.....	1,600	
Coupon books	1,550	886,166

MEDICAL GOODS.

New York City	173,050	
Brooklyn. By New York Committee.....	9,550	
Coupon books		182,600

MECHANICAL RUBBER GOODS.

New York City	1,449,000	
Brooklyn. By New York Committee.....	1,500	
Coupon books	1,100	1,452,266

RECLAIMED RUBBER.

New York City only	263,650	263,650
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HARD RUBBER.

New York City	490,650	
Brooklyn. By New York Committee	12,850	503,500

PUBLICITY.

New York City only	15,000	15,000
		\$10,515,350
Brooklyn (direct)		259,700
Grand total		\$10,775,050



WINDOW DISPLAY OF THE UNITED STATES RUBBER CO., NEW YORK CITY.

LIBERTY LOAN PUBLICITY BY THE RUBBER INDUSTRY.

Much valuable publicity was donated by the rubber industry to promote the Fourth Liberty Loan. Several patriotic advertisers devoted space in the October issue of this journal to an appeal to city bonds to the utmost. THE INDIA RUBBER WORLD.

donated a double-page spread and "The Publishers' Page" to the same worthy cause.

Forty-two representative members of the rubber trade of New York City, including THE INDIA RUBBER WORLD, contributed full pages in leading daily newspapers to assist the Liberty Loan Committee of the Second Federal Reserve District.

THE LIBERTY LOAN IN MASSACHUSETTS.

In Massachusetts 80 rubber firms subscribed \$2,988,000 and 20,818 employees subscribed \$1,847,400, making a total of \$4,845,400, or nearly double the corresponding subscription to the previous loan. The 100 per cent firms were the Acushnet Process Co., Aetna Rubber Co., Ajax Rubber Co., Akron Tire & Rubber Co., Athol Manufacturing Co., Atlantic Rubber Co., A. S. Brock Rubber Co., Eastern Rubber Co., Easthampton Rubber Thread Co., Firestone Tire & Rubber Co., Globe Rubber Works, The B. F. Goodrich Co., Worcester, Goodyear Tire & Rubber Co., Spring-

field, Haverhill Rubber Co., Oliver R. Howe, Lawrence Rubber Co., Mayflower Rubber Works, Monaquiot Rubber Works Co., Needham Tire Co., Panther Rubber Manufacturing Co., Para Rubber Co., Lewis E. Tracy.

The Fisk Rubber Co. employees made a remarkable record of 98.4 per cent, 3,037 out of 3,085 employees subscribing \$346,850. When the influenza epidemic made it impossible to hold meetings to promote the bond-selling campaign, this important work was taken up by the weekly "Fisk Bulletin," and a daily edition was published.

Other firms having large working forces, whose employees made especially high records were the Converse Rubber Co., 93.6 per cent; Standard Woven Fabric Co., 93.3 per cent; Boston Rubber Shoe Co., 90.4 per cent; Hood Rubber Co., 85.1 per cent; Revere Rubber Co., 77.7 per cent; Plymouth Rubber Co., 74.1 per cent; American Rubber Co., 81.9 per cent.

FOURTH LIBERTY LOAN SUBSCRIPTIONS OF THE RUBBER INDUSTRY OF MASSACHUSETTS.

Acushnet Process Co.	\$25,500	Eastern Rubber Co.	5,450	Meade Rubber Co.	18,350
Aetna Rubber Co.	500	Easthampton Rubber Thread Co.	81,500	Monaquiot Rubber Works Co.	18,300
Ajax Rubber Co., Inc.	8,050	Elastic Tire & Rubber Co. (Boston)	1,550	Morris, Ernest	1,500
Akron Tire & Rubber Co.	300	Ellis Cement Co.	300	Mutty Co., J. J.	114,100
American Rubber Co.	179,600	Everlastik, Inc.	66,650	Mystic Rubber Co.	1,000
Alden Rubber Co.	11,500	Everlastik, Inc.	66,650	Needham Tire Co.	2,900
Appleton & Son, F. H.	60,000	London, David	4,600	New York Belting & Packing Co.	11,100
Apsley Rubber Co.	39,000	Lehman, L. W.	2,900	Owen Tire Co.	2,000
Archer Rubber Co.	24,400	Lowson Tire & Rubber Co. (Boston)	25,500	Panther Rubber Manufacturing Co.	10,850
Archer-Strauss Rubber Co.	4,000	Firestone Tire & Rubber Co. (Springfield)	2,550	Para Rubber Co.	850
Athol Manufacturing Co.	1,500	Fisk Rubber Co., The	1,746,000	Plymouth Rubber Co.	50,000
Atlantic Rubber Co.	2,100	Franklin Rubber Co.	1,400	Reading Rubber Manufacturing Co.	54,850
Axon Sole Co.	1,200	Guthrie Packing Co.	2,200	Republic Rubber Co.	10,000
Back Bay Tire Co.	17,500	Guthrie Rubber Works Co.	1,400	Revere Rubber Co.	55,000
Boston Blacking Co.	204,400	Guthrie, Co., The B. F. (Springfield)	1,400	Riley, P. R.	5,300
Boston Rubber Shoe Co.	300,000	Goodrich Co., The B. F. (Worcester)	1,500	Ryan Ideal Stain Blacking Co.	5,000
Boston Woven Hose & Rubber Co.	1,250	Gutta Percha & Rubber Manufacturing Co. (Springfield)	1,150	Sawyer Mills	26,500
Brock Rubber Co., A. S.	25,000	Hale Rubber Co., Alfred	2,750	Simplex Wire & Cable Co.	25,000
Cambridge Rubber Co.	39,350	Hatch Co., H. S.	500	Standard Tire & Rubber Co.	10,600
Carr Co., F. S.	42,000	Haverhill Rubber Co.	13,150	Standard Woven Fabric Co.	29,350
C. C. B. Co.	4,200	Hazen-Brown Co.	5,000	Stoughton Rubber Co.	28,900
C. C. Fire Hose Co.	53,650	Hood Rubber Co.	750,000	Stutz & Vossward	4,150
Clapp Rubber Co., E. W.	25,000	Hosier, Oliver R.	250	Taunton Rubber Co.	750
Clifton Manufacturing Co.	25,000	Lucas, Ernest	550	Town, Lewis E.	8,000
Colton Elastic Webbing Co., Geo. S.	25,000	Knight Rubber Co.	1,050	Tyler Rubber Co.	62,500
Converse Rubber Shoe	220,250	Rubbar Rubber Co.	7,700	United States Rubber Co. (Boston)	10,000
Crandall Packing Co.	700	Layports & Sons, Wm.	6,050	United States Rubber Co. (New England)	38,250
Crocker Rubber Co.	150	Lawrence Rubber Co.	650	United States Rubber Co. (Mechanical Division)	24,050
Danversport Rubber Co.	9,000	Lowell Insulated Wire Co.	21,000	United States Rubber Co. (Springfield)	13,000
Davidson Rubber Co.	10,700	Mason, Joseph	100	United States Tire Co. (Boston)	28,500
		Mayflower Rubber Works	19,600	United States Tire Co. (Worcester)	2,850
		Mayo Co., Wm. F.	17,150	Wood Elastic Webbing Co., J. W.	31,800
				Total	\$4,845,400

GOVERNMENT OFFICIALS IN CHARGE OF RUBBER MATTERS.

The following list of government officials having to do with rubber control has been compiled by the secretary for the 1918 Year Book of The Rubber Association of America, Inc.

WAR INDUSTRIES BOARD.

Bernard M. Baruch, Chairman.
Judge Edwin B. Parker, Priorities Commissioner and Chairman of Priorities Committee.
George N. Peek, Commissioner of Finished Products.

TEXTILE DIVISION.

John W. Scott, director.

RUBBER AND RUBBER GOODS SECTION.

Harry T. Dunn, Chief.

Assistants—J. W. Rowland, H. E. Joy, J. C. Matlack, G. E. C. Kelly.

COTTON GOODS SECTION.

Spencer Turner, Chief.

CONSERVATION DIVISION.

A. W. Shaw, Chairman.

Melvin T. Copeland, Executive Secretary.

CHEMICALS DIVISION.

Charles H. MacDowell, Director.

SULPHUR AND PYRITES SECTION.

Wm. G. Woolfolk, Director.

ELECTRIC WIRE AND CABLE SECTION.

LeRoy Clark, Director.

MEDICAL SECTION.

Lt. Col. F. F. Simpson, Director.

RESOURCES AND CONVERSION SECTION.

Chas. A. Otis, Director.

WAR TRADE BOARD.

Clarence M. Woolley, Representative of the Secretary of Commerce.

Edwin F. Gay, Representative of the United States Shipping Board.

BUREAU OF IMPORTS.

Frederick B. Peterson, Director.

William E. Bruyn, Commercial Adviser.

Walter H. Dickerson, Trade Adviser for Rubber and Kindred Products.

E. B. Wilson, Counsel.

BUREAU OF EXPORTS.

C. A. Richards, Director.

BUREAU OF RESEARCH.

Arthur E. Swanson, Director.

WAR TRADE INTELLIGENCE BUREAU.

Paul Fuller, Jr., Director.

QUARTERMASTER'S DEPARTMENT ORDERS 1,305,680 PAIRS OF RUBBER BOOTS.

The Quartermaster's department of the United States Government has placed orders for hip boots and short boots with practically every footwear manufacturing concern, to be delivered on or before January 1, 1919. The order, which amounts to 1,305,680 pairs, is allotted as follows:

Apsley Rubber Co., 42,515 pairs of hip boots and 1,589 pairs of short boots; Beacon Falls Rubber Shoe Co., 45,016 pairs hip boots; 1,682 pairs short boots; Bourn Rubber Co., 18,757 pairs hip boots; 701 pairs short boots; Converse Rubber Shoe Co., 42,515 pairs hip boots and 1,588 pairs short boots; Firestone Tire & Rubber Co., 106,288 pairs hip boots and 3,971 pairs short boots; The B. F. Goodrich Co., 96,285 pairs hip boots and 3,597 pairs short boots; The Goodyear Tire & Rubber Co., 7,503 pairs hip boots and 280 pairs short boots; Hood Rubber Co., 331,369 pairs hip boots and 12,300 pairs short boots; La Crosse Rubber Co., 31,261 pairs hip boots and 1,168 pairs short boots; Lambertville Rubber Co., 10,004 pairs hip boots and 374 pairs short boots; Mishawaka Woolen Manufacturing Co., 85,631 pairs hip boots and 3,177 pairs short boots; United States Rubber Co., 433,988 pairs hip boots and 16,211 pairs short boots.

In addition to these there was awarded to the United States Rubber Co. the following out-sizes; 5,032 pairs of hip boots and 188 pairs of short boots, size 14, and 2,516 pairs of hip boots and 94 pairs of short boots, size 15.

LIMITED CARGO SPACE FOR EXPORTS TO RUSSIA.

The War Trade Board announces that a limited amount of cargo space may be available for shipments of all commodities from the Pacific Coast direct to Vladivostok. Applications for export licenses will now be considered, and in allocating space, preference will be given to material covered by licenses issued on or after October 7, 1918. Exporters are requested to file their applications with the Bureau of Exports, War Trade Board, Washington, D. C.

DETAILS OF RUBBER BUTTON MANUFACTURE.

The largest factory in the world manufacturing rubber buttons is located at College Point, Long Island, New York. In normal times it makes dress buttons to the value of \$60,000 a year, and some uniform buttons for the Navy. At present its entire output is being used for this latter purpose, so great is the demand, and this business amounted in 1917 to about \$120,000. This concern employs about 85 workers, half of whom are women, and pays wages proportionate to those in other branches of the button industry. The process of manufacture¹ is described as follows:

The calendered plastic sheets of rubber are first vulcanized hard, and then warmed on steam tables and thus softened to facilitate the cutting. The blanks are then punched out by power presses, and allowed to harden before being sent to the button presses where they are again warmed on steam tables until they become soft; in this state they are patterned in heated, highly finished steel dies operated by hand presses. Two buttons are patterned in each die and press, and they must remain in the press until they are cool and the pattern is set. One operator manages eight of these presses, the feeding and emptying of which in turn require about the time needed for cooling the buttons. One operator can produce from 20 to 40 gross per day, according to size, with 8 presses. When the button leaves the press it is practically complete except for the holes which are drilled through it with semi-automatic machinery. This process requires great care and skill, in order to prevent the drilling from interfering with the pattern or finish of the button. Countersinking at the back of the button removes the sharp edge around the holes,

and the removal of the sharp fin or film of rubber left around the outer edge is accomplished by the pressing operation. Rubber buttons are made in one piece, and usually have from two to four holes drilled from face to back. Very few are self-shank, and none are made with a metal shank.

Owing to the costly material used and to the many expensive labor operations through which the goods must pass, production is usually limited to dress buttons for women's and men's clothing, and chiefly to black, because of the impossibility of coloring hard rubber. The buttons range in size from 18 to 70 lines, and in price from 60 cents to \$7.50 per gross. There is no foreign competition and none of these buttons are exported.

The manufacture of Navy buttons proceeds somewhat differently, however, for the reason that it is necessary for these buttons to be heat-proof and not liable to have their pattern obliterated or their shape drawn back to the blank form by the application of heat sufficient to soften the rubber, as will happen with buttons made by the method just described.

Navy buttons are not made from flat discs or blanks punched from sheets; the blanks are pressed to near the finished form from the plastic rubber and are partly hardened by vulcanization;



RUBBER BUTTONS FOR OUR NAVY.

they thus have the finished shape of the button but are without any pattern or design. They next go to the imprint dies in which they are shaped under hydraulic pressure between steam-heated plates and allowed to remain until fully cured; no amount of afterheating can obliterate the device imprinted on their faces. Each man operates a sufficient number of presses to permit filling, pressing, vulcanizing, cooling, and emptying, without any loss of time, and production averages about 20,000 small or 8,000 large buttons per day per man.

Unlike the buttons made by the other process, these heat-proof buttons do not come from the presses with polished surfaces; the polishing is a hand operation requiring the application, by means of a special holding tool, of each button separately to a rapidly revolving polishing buff. Before the buttons have arrived at this stage they have passed through several inspections and all imperfect ones have been rejected. After polishing they go through a final inspection and are then packed in boxes ready for delivery.

THE GOVERNMENT REQUESTS NUT-SHELLS FOR GAS-MASK CARBON.

Much has been published concerning the patriotic work of those who have entered the employ of the gas-mask manufacturers to meet the demand for workers to replace the men gone overseas. Now another opportunity for patriotic service presents itself to the whole people. The Government needs 1,000,000 pounds of nut-shells and fruit-pits daily for manufacturing charcoal to put into the gas-masks. At present it is able to purchase only about one-third of this amount, pending the completion of arrangements to secure supplies from the Far East.

The Chemical Warfare headquarters has renewed its appeal to the public to save all the pits and shells possible, as a charcoal better for the purpose is made from these than from wood. Many individuals probably think the few shells or pits they can save make no difference, but it is only another instance of the little making much when multiplied by the number of people in the whole country. Receptacles have been placed in public places where dried fruit pits and nut shells may be contributed, and the public is urged to co-operate in furnishing these materials toward the completion of the gas-masks which are so greatly needed by our soldiers overseas.

¹From Tariff Information Series, No. 4, "The Button Industry."

THE BICYCLE IS COMING BACK.

The War Industries Board has put the stamp of approval on the bicycle as a healthful and virtually indispensable form of locomotion and a direct contributor to greater efficiency, both in manufacturing centers and the country. The present spirit of economy, the prevalence of good roads, and the durability of modern bicycle tires are all proving potent factors in restoring the bicycle to popular favor. All indications point to a big bicycle year in 1919, with consequent increase in the demand for rubber tires.

WATERPROOF GARMENTS SEIZED BY THE GOVERNMENT.

So great is the demand for raincoats and waterproof garments that about the middle of October the Government notified every manufacturer to cease delivering any such garments, sold or unsold, which were then in their possession or might be up to and including October 26, these goods to be shipped immediately to the Government for use in the cantonments in this country. It was the desire of the Government thus to secure a practical, immediate delivery of a million coats, but as near as can be ascertained about 275,000 were thus obtained. This is in no way to be confused with the regular contracts for coats for use of the Army.

SERVICE NOTES AND PERSONALS.

Six men on October 22 undertook to fly a new Navy twin-motor dirigible balloon from Akron, Ohio, to Rockaway, N. Y.

Among them were Lieut. Donald T. Hood, son of Frederic C. Hood, Hood Rubber Co., Watertown, Massachusetts, and Lieut. Ralph A. D. Preston, formerly in charge of the flying field of the Goodyear Tire & Rubber Co., Akron, Ohio. The first lap of the trip to Washington, District of Columbia, took nine hours and the rate of speed averaged 35 miles an hour. The dirigible flew over the city and made a landing at Anacostia aviation field for fuel, after which the trip was continued.

Private Joseph Pezzullo, who formerly worked for the Bourn Rubber Co., Providence, Rhode Island, has been severely wounded while serving with Company M, 328th Infantry, in France. He went to Camp Devens on October 3, 1917, and went overseas last spring.

Henry G. Tyer, president of the Tyer Rubber Co., Andover, Massachusetts, left October 22 for Camp Taylor, Kentucky, to enter the Artillery Officers' Training School. He is 33 years of age. His business associates presented him with an engraved wrist-watch previous to his departure.

O. M. Brede, assistant secretary of the Detroit section of the Society of Automotive Engineers, is now stationed at the Aviation Repair Depot, Dallas, Texas, and is a corporal in the 877th Aero Squadron. Mrs. Brede will perform his secretarial duties in his absence.

F. M. Morris, factory paymaster of the Firestone Tire & Rubber Co., Akron, Ohio, recently enlisted in the Quartermaster's department and is at Camp Meade, Washington.

A. H. Miner, formerly in the legal department of The B. F. Goodrich Co., Akron, Ohio, has secured a first lieutenant's commission in the Chemical Warfare Service (unattached) of the American Expeditionary Forces.

Lieutenant-Colonel Fred Garcin, son of Edward H. Garcin, of Edward H. Garcin & Co., 1790 Broadway, New York City, is doubtless the youngest lieutenant-colonel in the United States Army. He has been in the service for nine years and has taken every advancement in rank from second lieutenant to his present grade. His station is with the South Pacific Coast Artillery, District of San Francisco.

On his return from duty at the British Embassy in London, H. Stuart Hotchkiss was promoted to the rank of lieutenant-colonel and assigned to the Bureau of Aircraft Production as chief of the raw materials department in Washington, D. C.

John L. Ryan, a former traveling salesman out of Milwaukee for the Goodyear Tire & Rubber Co., Akron, Ohio, is now a sergeant in Company F, 340th Infantry, 85th Division, American Expeditionary Forces. Robert E. Lee, head of the department

of labor of the Firestone Tire & Rubber Co., Akron, Ohio, has been elected Chief of the Personnel Staff of the Quartermaster General's office, Washington, District of Columbia. He will have charge of selecting men to fill positions in the United States Quartermaster's Department. Mr. Lee has been with the Firestone company for more than five years.

H. G. Zimmerman, formerly with the San Francisco branch of The B. F. Goodrich Co., Akron, Ohio, is now in service at Section Naval Base, United States Harbor Patrol, San Diego, Calif.



ROBERT E. LEE.

Diomedes Pereyra y M., a former employee in the art division of the advertising department of The B. F. Goodrich Co., Akron, Ohio, speaking French, Spanish and Portuguese in addition to English, is now in Uncle Sam's service as an interpreter in France. He comes from a well-known Spanish family in Bolivia.

Paul H. Loewenthal, of The Loewenthal Co., 23 Heyward street, Brooklyn, New York, has enlisted in the Tank Corps.

Lyman L. Weld, formerly of the advertising department of The B. F. Goodrich Co., Akron, Ohio, has arrived in France to assist A. B. Jones, recently placed in charge of French Red Cross supplies.

MARTYRS TO THE CAUSE OF LIBERTY.

CAPTAIN RALPH W. STEWART, an officer in the Fife & Forfar Yeomanry, was killed in action on September 2, 1918. He was a member of the firm of Ralph W. Stewart & Co. (Scottish Central Rubber Co.), manufacturing rubber boots and shoes, waterproofs, and general rubber goods at Dunfermline, Scotland.

Mrs. Jesse Sinclair of Providence, Rhode Island, has received word from the Canadian authorities that her husband was killed in action September 30, 1918. He worked for the Revere Rubber Co., in Chelsea, Massachusetts, for several years and later was a tire finisher for five years for the same company in its Providence plant. He enlisted in the British Canadian Infantry forces a year ago and went overseas last January. He leaves his widow and one daughter.

Ernest W. Crosley, formerly employed by the Glendale Elastic Fabric Co., Providence, Rhode Island, is reported to have been killed in action September 22. He was chief gunner in a machine gun battalion. Leaving Providence for Camp Dix on April 28 last, he went overseas in May, and was promoted to first-class private upon arrival in France.

The Cuban Tire & Rubber Co. (Compania Cubana de Zunchos y Goma), Havana, Cuba, subscribed \$10,000 to the Fourth Liberty Loan, doubling its subscription to the Third Liberty Loan.

LIEUTENANT
R. A. D. PRESTON.



SERGEANT DUMONT SHELLS THE HUNS.

SOMEWHERE IN FRANCE.

DEAR ———:
Well, old top, I am still alive and unwounded, but just my good luck saved me so far, as we certainly have been shot up some. I have had the — old shells strike within a few feet of me and I would fall to the ground when I heard them coming. You know you can hear them coming and then everyone falls to the ground or gets into his dug-out. Our battery has had pretty bad luck—35 casualties out of 210 men and we have been on an active front for only three weeks. Four have been killed and the balance wounded and gassed. We had two men put out of commission the second day we were here.

On August 22 I was sitting eating my meal on a table that the boches had left in their retreat and had just got up to get second on the feed when along came a shell and knocked the table clean out of sight. I was congratulating myself on my escape with a number of the fellows, and was looking at the hole it made, when the Hun started bombarding us. It lasted about an hour and killed our battery commander and one other man. It also gassed about twenty others and killed twelve horses. Lieutenant Ried, who was killed, was in a dug-out, and he got hit by a direct shot which very few dug-outs can stand. These dug-outs are built in the ground by the men about four to five feet deep and covered with bags and dirt. You have to get into them like a rabbit. The hole is just large enough to get into and as I am by no means as large as I used to be, the hole does not have to be very big. After you are in, you have a few rats for company. This is what happened to me. I had left my cap inside of the dug-out one evening, as most of the time we wear steel helmets, and we were ordered to move the next afternoon. I started to pick up my cap when a rat ran out but did not seem very anxious to leave. I looked inside of my cap and I saw that it had eaten a hole in it and inside had made a home for itself and had left six young ones.

The next day after our battery commander was killed, another of our men was killed watering his horse along the road and I was ordered to take a detail of men and bury him. While I was burying him, we were under more or less of shell fire. We finished our job and had started back when a shell hit near us and two of my men were wounded. You ought to have heard me curse those Germans as we had to carry the fellows about two miles to the Aid Station. The wounds did not amount to much as the men were hit in the leg. Our regiment has been hit pretty hard with casualties but expects to go to a rest camp soon and reorganize.

I am on duty now with the guns for twenty-four hours and it is some hard job as you have very little chance to sleep. Last



SERGEANT L. W. DUMONT.

LETTERS FROM THE FRONT

night I had to fire a shot every fifteen minutes. On each shell I fired I wrote a name in chalk. I wrote yours, Pell's, Stiles', Ellis', Obalski's, Sweeney's, Maurer's, Baird's, Miss Breaker's, Miss Rose's, Miss Lucey's and several others. We have twenty-four hours on and twenty-four hours off.

You should see the air fights. We have them every day and it certainly is a wonderful sight but with all the sights and excitement, would give an arm to be back on Broadway and back in business harness again. I have just this minute been told that one of our corporals has been killed; he was hit by a shell and the largest piece of him left was about two feet long. They say he is a terrible sight. This war is terrible. You never know from one second to another when you are going "West," and this corporal was just walking from the guns to the main camp. I sometimes wonder if any of us will get back. Sergeant Becker has gone to the Officers' Training School and Sergeant Welsh has been made a first sergeant. I can give you very little news about the way the war is going as you get more news in the States than we do. On our sector we have Fritz worried. He is making a stand but before long we will soon send him on his way again.

Please remember me to all the bunch in the office and all inquiring friends.

Sincerely,

DUMONT.

NEW GENERAL IMPORT LICENSE DOES NOT AFFECT RUBBER.

Rubber crude, scrap and reclaimed; balata, jelutong, gutta percha, gutta siak; manufacturers of rubber; also raw cotton, cotton duck and yarn, are among the commodities specifically excluded from the terms of the new general import license P.B.F. No. 27, effective on and after October 1, 1918, covering the importation of all commodities into the United States from the United Kingdom, France, Italy, or their European or Mediterranean African possessions or protectorates.

PROCEDURE GOVERNING EXPORTS TO SWEDEN.

Arrangements have been made by the War Trade Board with the following import associations in Sweden to accept, on behalf of the Swedish importer actually interested, consignments of the articles mentioned below:

Rubber and rubber goods: Rubber Import Association.

Chemicals, technical oils, antimony, sulphide, sulphur, and similar commodities: Chemical Industries Import Associations. Cotton Textiles: Textile Import Association.

Exporters in the United States, before filing applications for export licenses, must obtain from the prospective importer in Sweden advice that there has been issued by an appropriate importing association, or by the Statens Handel's Kommission, subsequent to June 28, 1918, a certificate covering the proposed consignment. The number of the certificate should be forwarded by the importer in Sweden to the American exporter. This number should be specified on Supplemental Information Sheet X-104, which must be duly executed and annexed to Application Form X for an export license.

The shipment must be consigned to the export association that issued the certificate, and exporters are required to state on the application the name of the person or firm in whose favor the import certificate was issued. Shipments may be made only on vessels flying the Swedish flag.

Activities of the War Service Committee of the Rubber Industry of the U. S. A.

THE War Service Committee of the Rubber Industry of the U. S. A. has been working incessantly in behalf of the whole industry and matters of greatest importance to the trade have engaged the attention of this committee during the past month, a complete record of which will be found in these columns.

The Committee has been enlarged and Division Committees appointed, and a plan of organization and procedure governing the latter committees has been adopted. The personnel of the various committees is given below:

PERSONNEL OF THE WAR SERVICE COMMITTEE CENTRAL COMMITTEE.

B. G. Work, chairman, The B. F. Goodrich Co., 1780 Broadway, New York City.
Homer E. Sawyer, vice-chairman, United States Rubber Co., 1790 Broadway, New York City.
E. H. Broadwell, The Fisk Rubber Co., Chicopee, Falls, Massachusetts.
H. S. Firestone, Firestone Tire & Rubber Co., Akron, Ohio.
J. Newton Gunn, United States Tire Co., 1790 Broadway, New York City.
G. B. Hodgman, Hodgman Rubber Co., Tuckahoe, New York.
W. J. Kelly, Poel & Kelly, Inc., 347 Madison avenue, New York City.
P. W. Litchfield, The Goodyear Tire & Rubber Co., Akron, Ohio.
C. T. Wilson, Charles T. Wilson Co., Inc., 56 Wall street, New York City.
E. S. Williams, United States Rubber Co., 1790 Broadway, New York City.
TREASURER: H. S. Vorhis, 52 Vanderbilt avenue, New York City.
SECRETARY: M. L. Hemmings, 52 Vanderbilt avenue, New York City, and 808 Colorado Building, Washington, District of Columbia.

AIRCRAFT DIVISION.

P. W. Litchfield, chairman, The Goodyear Tire & Rubber Co., Akron, Ohio.
W. H. Yule, The B. F. Goodrich Co., Akron, Ohio.
A. E. Jure, United States Rubber Co., Newark, New Jersey.

BOOT AND SHOE DIVISION.

George H. Mayo, chairman, United States Rubber Co., 1790 Broadway, New York City.
Francis S. Dane, vice-chairman, Hood Rubber Co., Watertown, Massachusetts.
Hugh Bullock, Converse Rubber Shoe Co., Malden, Massachusetts.
Robert S. Emerson, Narragansett Rubber Co., Bristol, Rhode Island.
W. S. Funk, La Crosse Rubber Mills Co., La Crosse, Wisconsin.
W. G. Hill, Apsley Rubber Co., Hudson, Massachusetts.
T. W. McDowell, Goodyear Rubber Co., Middletown, Connecticut.
L. T. McCollum, Mishawaka Woolen Manufacturing Co., Mishawaka, Indiana.
Francis R. McKenna, Bourn Rubber Co., Providence, Rhode Island.
Theodore Nicar, Firestone Tire & Rubber Co., Akron, Ohio.
George W. Prall, Lambertville Rubber Co., Lambertville, New Jersey.
J. A. Rishel, The B. F. Goodrich Co., Akron, Ohio.
L. C. Warner, Beacon Falls Rubber Shoe Co., Beacon Falls, Connecticut.
SECRETARY: E. S. Sylvester, United States Rubber Co., 1790 Broadway, New York City.

CLOTHING DIVISION.

N. Lincoln Greene, chairman, American Rubber Co., Boston, Massachusetts.
George G. Bryant, vice-chairman, Chicago Rubber Clothing Co., Racine, Wisconsin.
Charles Brown, Mystic Rubber Co., West Medford, Massachusetts.
J. T. Callahan, Archer Rubber Co., Milford, Massachusetts.

S. T. Hodgman, Hodgman Rubber Co., Tuckahoe, New York.
W. G. Hill, Apsley Rubber Co., Hudson, Massachusetts.
Dr. L. C. Hinebaugh, British-American Manufacturing Co., Springdale, Connecticut.
F. W. Jones, The B. F. Goodrich Co., Akron, Ohio.
C. Kenyon, Jr., C. Kenyon Co., 754 Pacific street, Brooklyn, New York.
E. C. Klauber, Rosenwald & Weil, Chicago, Illinois.
Warren MacPherson, Cambridge Rubber Co., Cambridge, Massachusetts.
John V. McHose, Scioto Rubber Co., Columbus, Ohio.
Charles Place, New York Mackintosh Clothing Co., Mamaroneck, New York.
W. M. Tenney, Clifton Manufacturing Co., Boston, Massachusetts.
SECRETARY: B. L. Swift, American Rubber Co., Boston, Massachusetts.

CRUDE RUBBER AND KINDRED PRODUCTS DIVISION.

C. T. Wilson, chairman, Charles T. Wilson Co., Inc., 56 Wall street, New York City.
G. B. Hodgman, vice-chairman, Hodgman Rubber Co., Tuckahoe, New York.
E. H. Broadwell, The Fisk Rubber Co., Chicopee Falls, Massachusetts.
E. H. Huxley, United States Rubber Export Co., Limited, 1790 Broadway, New York.
W. J. Kelly, Poel & Kelly, Inc., 347 Madison avenue, New York City.
H. E. Sawyer, United States Rubber Co., 1790 Broadway, New York City.
B. G. Work, The B. F. Goodrich Co., 1780 Broadway, New York City.
SECRETARY: H. S. Vorhis, 52 Vanderbilt avenue, New York City.

FOREIGN TRADE DIVISION.

E. H. Huxley, chairman, United States Rubber Export Co., Limited, 1790 Broadway, New York City.
F. E. Titus, vice-chairman, The B. F. Goodrich Company, 1780 Broadway, New York City.
J. E. Baum, Empire Rubber & Tire Co., Trenton, New Jersey.
E. H. Broadwell, The Fisk Rubber Co., Chicopee Falls, Massachusetts.
F. E. Dayton, Ajax Rubber Co., Inc., 1796 Broadway, New York City.
R. H. DANIELS, The Goodyear Tire & Rubber Co., Akron, Ohio.
A. S. Hardy, Manhattan Rubber Manufacturing Co., 120 Broadway, New York City.
W. B. Loughton, Hood Rubber Co., Watertown, Massachusetts.
George H. Moss, Electric Cable Co., 10 East 43d street, New York City.
R. J. Owens, Boston Woven Hose & Rubber Co., Boston, Massachusetts.
A. G. Partridge, Firestone Tire & Rubber Co., Akron, Ohio.
Henry G. Tyer, Tyer Rubber Co., Andover, Massachusetts.

GAS DEFENSE DIVISION.

Dr. W. C. Geer, chairman, The B. F. Goodrich Co., Akron, Ohio.
William Stephens, vice-chairman, The Goodyear Tire & Rubber Co., Akron, Ohio.
George W. Dann, Pennsylvania Rubber Co., Jeannette, Pa.
R. T. Griffith, The Miller Rubber Co., Akron, Ohio.
Dr. L. C. Hinebaugh, British-American Manufacturing Co., Springdale, Connecticut.
George A. Ludington, The Fisk Rubber Co., Chicopee Falls, Massachusetts.
T. W. Miller, Faultless Rubber Co., Ashland, Ohio.
Dr. Theodore Whittelsey, United States Rubber Co., 1790 Broadway, New York City.
SECRETARY: N. S. Noble, The B. F. Goodrich Co., Akron, Ohio.

HARD RUBBER DIVISION.

H. Weida, chairman, India Rubber Co., New Brunswick, New Jersey.
F. G. Achelis, vice-chairman, American Hard Rubber Co., 11 Mercer street, New York City.
Bruce Bedford, Luzerne Rubber Co., Trenton, New Jersey.
Harry Boyer, Joseph Stokes Rubber Co., Trenton, New Jersey.

J. W. Maguire, Brunswick-Balke-Collender Co., Muskegon, Michigan.
 Samuel H. Dodd, Vulcanized Rubber Co., 251 Fourth avenue, New York City.
 John Joseph, The B. F. Goodrich Co., Akron, Ohio.

INSULATED WIRE AND CABLE DIVISION.

Wallace S. Clark, chairman, General Electric Co., Schenectady, New York.
 Edward Sawyer, vice-chairman, Atlantic Insulated Wire & Cable Co., 52 Venderbilt avenue, New York City.
 Joseph C. Belden, Belden Manufacturing Co., Chicago, Illinois.
 T. Whitney Blake, Whitney Blake Manufacturing Co., New Haven, Connecticut.
 George B. North, Hazard Manufacturing Co., 533 Canal street, New York City.

MECHANICAL GOODS DIVISION.

E. S. Williams, chairman, United States Rubber Co., 1790 Broadway, New York City.
 George E. Hall, vice-chairman, Boston Woven Hose & Rubber Co., Boston, Massachusetts.
 I. R. Bailey, The Goodyear Tire & Rubber Co., Akron, Ohio.
 C. C. Case, United States Rubber Co., 1790 Broadway, New York City.
 C. A. Daniel, Quaker City Rubber Co., Philadelphia, Pennsylvania.
 C. D. Garretson, Electric Hose & Rubber Co., Wilmington, Delaware.
 J. H. Kelly, Hewitt Rubber Co., Buffalo, New York.
 J. A. Lambert, Acme Rubber Manufacturing Co., Trenton, New Jersey.
 Guy E. Norwood, Republic Rubber Corp., Youngstown, Ohio.
 B. H. Pratt, The Federal Rubber Co., Cudahy, Wisconsin.
 W. O. Rutherford, The B. F. Goodrich Co., Akron, Ohio.
 Henry Spadone, Gutta Percha & Rubber Manufacturing Co., 126 Duane street, New York City.
 Arthur F. Townsend, Manhattan Rubber Manufacturing Co., Passaic, New Jersey.
 John J. Voorhees, Voorhees Rubber Manufacturing Co., Jersey City, New Jersey.
 SECRETARY: A. C. Tucker, United States Rubber Co., 1790 Broadway, New York City.

MEDICAL RUBBER GOODS AND SUNDRIES DIVISION.

A. W. Warren, chairman, Hodgman Rubber Co., Tuckahoe, New York.
 W. O. Rutherford, vice-chairman, The B. F. Goodrich Co., Akron, Ohio.
 W. S. Davison, The Miller Rubber Co., Akron, Ohio.
 Charles J. Davol, Davol Rubber Co., Providence, Rhode Island.
 S. H. Jones, United States Rubber Co., 1790 Broadway, New York City.
 F. H. Jones, Tyer Rubber Co., Andover, Massachusetts.
 T. W. Miller, Faultless Rubber Co., Ashland, Ohio.
 E. J. Schutz, Rubber Products Co., Barberton, Ohio.
 O. O. Williams, Seamless Rubber Co., New Haven, Connecticut.
 SECRETARY: J. Russell Parker, Parker, Stearns & Co., 288 Sheffield avenue, Brooklyn, New York.

PNEUMATIC TIRE DIVISION.

G. M. Stadelman, chairman, The Goodyear Tire & Rubber Co., Akron, Ohio.
 E. H. Broadwell, vice-chairman, The Fisk Rubber Co., Chicopee Falls, Massachusetts.
 J. E. Baum, Empire Rubber & Tire Co., Trenton, New Jersey.
 J. S. Broughton, United & Globe Rubber Manufacturing Cos., Trenton, New Jersey.
 O. R. Cook, Kelly-Springfield Tire Co., 1614 Prospect avenue, Cleveland, Ohio.
 W. W. Duncan, Hood Tire Co., Watertown, Massachusetts.
 Seneca G. Lewis, Pennsylvania Rubber Co., Jeannette, Pennsylvania.
 H. L. McClaren, Ajax Rubber Co., Inc., 1796 Broadway, New York City.
 W. O'Neil, General Tire & Rubber Co., Akron, Ohio.
 W. O. Rutherford, The B. F. Goodrich Co., Akron, Ohio.
 J. W. Thomas, Firestone Tire & Rubber Co., Akron, Ohio.
 O. L. Weaver, Star Rubber Co., Akron, Ohio.
 SECRETARY: J. C. Weston, United States Tire Co., 1790 Broadway, New York City.

RAILWAY SUPPLIES DIVISION.

H. E. Raymond, chairman, The B. F. Goodrich Co., 1780 Broadway, New York City.
 J. H. Kelly, vice-chairman, Hewitt Rubber Co., Buffalo, New York.

I. R. Bailey, The Goodyear Tire & Rubber Co., Akron, Ohio.
 J. S. Broughton, United & Globe Rubber Manufacturing Cos., Trenton, New Jersey.
 J. H. Cobb, New York Belting & Packing Co., 91 Chambers street, New York City.
 C. A. Daniel, Quaker City Rubber Co., Philadelphia, Pennsylvania.
 H. M. Green, Manhattan Rubber Manufacturing Co., Passaic, New Jersey.
 George E. Hall, Boston Woven Hose & Rubber Co., Boston, Massachusetts.
 J. A. Lambert, Acme Rubber Manufacturing Co., Trenton, New Jersey.
 G. E. Norwood, Republic Rubber Corp., Youngstown, Ohio.
 F. H. Smith, New Jersey Car Spring & Rubber Co., Inc., Jersey City, New Jersey.

RECLAIMED RUBBER DIVISION.

F. H. Appleton, chairman, F. H. Appleton & Son, Inc., Boston, Massachusetts.
 C. W. Harrison, vice-chairman, Bloomingdale Rubber Co., 501 Fifth avenue, New York City.
 E. A. Anderson, Rubber Regenerating Co., Naugatuck, Connecticut.
 John S. Clapp, E. H. Clapp Rubber Co., Boston, Massachusetts.
 R. A. Low, United States Rubber Reclaiming Co., Inc., 30 East 42nd street, New York City.
 J. S. Lowman, Philadelphia Rubber Works Co., Akron, Ohio.
 Joseph F. McLean, Pequanoc Rubber Co., Butler, New Jersey.

SOLID TIRE DIVISION.

J. W. Thomas, chairman, Firestone Tire & Rubber Co., Akron, Ohio.
 T. C. Marshall, vice-chairman, Kelly-Springfield Tire Co., 7th avenue and 57th street, New York City.
 W. H. Allen, The B. F. Goodrich Co., Akron, Ohio.
 H. G. Ault, General Tire & Rubber Co., Akron, Ohio.
 E. H. Broadwell, The Fisk Rubber Co., Chicopee Falls, Massachusetts.
 W. W. Duncan, Hood Tire Co., Watertown, Massachusetts.
 Hugo Hoffstaeder, Polack Tyre & Rubber Co., 1876 Broadway, New York City.
 P. W. Litchfield, The Goodyear Tire & Rubber Co., Akron, Ohio.
 John Morgan, McGraw Tire & Rubber Co., East Palestine, Ohio.
 Mark Roe, Republic Rubber Corp., Youngstown, Ohio.
 Thomas F. Walsh, Swinchart Tire & Rubber Co., Akron, Ohio.
 C. J. Welch, United States Rubber Co., 1790 Broadway, New York City.

PLAN OF ORGANIZATION AND PROCEDURE OF DIVISION COMMITTEES.**ORGANIZATION.**

The War Service Division Committees shall be representative of each branch of manufacture of the rubber industry, and shall be designated by such name or title as the Central Committee may determine.

Special committees may be appointed by the Central Committee to undertake any particular work for the benefit of the industry as a whole or any part thereof.

Appointment to membership on a Division Committee shall be made by the Central Committee.

Each Division Committee shall have a chairman and a vice-chairman, who shall be appointed by the Central Committee.

PERSONNEL.

Each Division Committee, with the exception of special committees heretofore mentioned, should be fully representative of the branch of the industry which it serves, and should include in its membership as far as possible representation of large, medium and small concerns.

The number of members on each committee shall be limited to fifteen, but should be no greater than is necessary to make it fully representative.

Any member of a Division Committee who may not be able to attend a meeting shall send as an alternate some one from his organization fully qualified to represent and act for him.

Each member of a Division Committee may have the privilege of bringing to any meeting a representative of his firm (either technical or commercial), or in his absence may send two representatives, one of whom shall be qualified to act for him as noted

in preceding paragraph, but in no event shall the member or his alternate have the power to cast more than one vote.

Acceptance of membership on any Division Committee shall be considered as carrying with it an obligation to attend committee meetings whenever held (or to send a qualified alternate), to serve unselfishly and to make whatever sacrifices are necessary for the common good.

Division Committee members should be selected from those who are associated with the concerns with whom they are connected in an official capacity when possible.

MEETINGS.

Meetings of Division Committees may be called by the Central Committee; by the Division Chairman, or in his absence by the vice-chairman, or through a request to the chairman in writing by three members.

PROCEDURE.

At all Division Committee meetings, full and complete minutes should be kept of the proceedings for a permanent record. A copy of such minutes should be promptly forwarded to each member of the Division, to the secretary and to each member of the Central Committee.

For the purpose of coordinating the various Divisions of the War Service Committee and to prevent conflict, Division Committees should submit to the Central Committee for approval:

(a) All questionnaires before submitting them to the trade at large.

(b) Any general communications to the trade or the Divisions regarding recommendations for the industry, and

(c) All actions taken by Division Committees should be submitted to the Central Committee for approval before becoming operative.

A brief but complete record of all actions taken at each Division Committee meeting should be promptly sent out to all concerns in the industry which the Committee represents as a "Recommendation to the Central Committee."

In view of the number of Division Committees which will hold meetings at approximately the same time, it will be physically impossible for the Secretary of the War Service Committee to attend all these meetings. Therefore, each Division Committee shall appoint a permanent secretary, who shall keep all minutes and records.

As it has been determined that there shall be no *ex-officio* representative of the Central Committee on any of the Division

Committees, the chairman of each Division Committee shall give proper notice to the War Service Committee, 52 Vanderbilt avenue, New York City, of the time and place of all Division Committee meetings, in order that each member of the Central Committee may be notified and may attend such meetings if he so desires, it being the desire of the Central Committee that its members may be in as close touch as possible with the work of the various Division Committees.

Each Division Committee shall prepare, with the assistance of the Secretary of the War Service Committee, a list of the concerns whom it represents, and a proper mailing list should be in the possession of each division chairman and secretary, as well as in the New York and Washington offices.

LABOR PRIORITY BULLETIN.

The Committee notified all rubber manufacturers on September 30, that the following bulletin just received from the Priorities Division, War Industries Board, Washington, District of Columbia, was forwarded by the Department of Labor on the 26th instant to all District Boards:

WAR INDUSTRIES BOARD, PRIORITIES DIVISION, WASHINGTON.

LABOR PRIORITY BULLETIN NO. 2.

To United States Employment Service and All Industrial Advisers:

You are notified that the rubber manufacturers of the country have reached an agreement with the Priorities Division of the proper control by the War Industries Board. The Priorities Division, deeming the remaining production to be essential, and the industry as a whole under said curtailed program to be entitled to general preferential treatment, has certified it under the designation "Rubber-plants engaged principally in manufacturing rubber products," upon Preference List No. 2, giving it a rating of Class IV.

We ask that the Industrial Advisers bring this bulletin to the attention of the District Boards for their information."

EDWIN B. PARKER,
Priorities Commissioner.

WASHINGTON, D. C., September 21, 1918.

Should any manufacturer have difficulty through the failure of the District Board to recognize the classification of the industry on the preference list, he should wire details to the secretary of the War Service Committee of the Rubber Industry, 808 Colorado Building, Washington, District of Columbia, who will immediately take the matter up with the proper governmental department.

REGULATIONS GOVERNING THE PRODUCTION OF RUBBER PRODUCTS, ISSUE NO. 1, OCTOBER 1, 1918.

Although these regulations have been revised by the War Service Committee they are published as a matter of record. The new regulations will be found on page 74 of this issue.

THE regulations governing the production of rubber products, dated October 1, were distributed to the rubber industry by the Committee on October 8, with the suggestion that each manufacturing concern deputize some one in its organization to pass on all orders received and make application to the War Industries Board through the War Service Committee for approval or rejection of all orders for articles which may be doubtful, or have not been definitely approved.

The regulations that follow are supplemental to War Industries Board Circular No. 24. (See THE INDIA RUBBER WORLD, October 1, 1918, page 12) and superseding War Service Committee letter of September 23, governing production for the October-December period, 1918. (See THE INDIA RUBBER WORLD, October 1, 1918, page 14.)

The War Industries Board has instructed the War Service Committee of the Rubber Industry to issue the following regulations for the purpose of defining the control program outlined in Circular No. 24 Priorities Division of the War Industries Board.

The production of all rubber products will be controlled under four general classifications as to articles and their use, as follows:

CLASS I.

Articles to be supplied on direct orders received from the following sources:

- Governmental departments.
- Government-controlled railways.
- Government-controlled express companies.
- Government-controlled telephone companies.
- Government-controlled telegraph companies.
- The American Red Cross.
- Allied Governments (Official).

CLASS II.

Articles to be supplied for use in industries approved by the War Industries Board. These industries comprise, first, those at present listed, or to be listed on preference lists issued or to be issued by the Priorities Division of the War Industries Board, and, second, those which, while not so listed, are adjudged or

to be adjudged by the Priorities Division of the War Industries Board as more or less essential and permitted to operate in whole or in part.

CLASS III.

Articles for general use.

CLASS IV.

Articles considered by the War Industries Board to be *non-essential*.

GENERAL INSTRUCTIONS.

As it is obviously impossible to prepare at one time lists of articles or industries which are complete, the lists herein published are subject to revision from time to time by additions or reductions.

The volume or quantity of production when not specifically limited to a definite amount must in no case exceed the normal current demand, and it is *incumbent upon manufacturers to satisfy themselves* that stocks do not accumulate, either with themselves, their dealers, jobbers or distributors, or ultimate consumers.

These regulations supersede War Service Committee letter of September 23, 1918, and are supplemental to Circular No. 24 issued by the Priorities Division of the War Industries Board, and the spirit of that circular is to be appreciated and followed in applying the regulations and restrictions herein contained.

After receipt of this notice no article shall be produced, except as herein provided, until a ruling has been obtained. Manufacturers producing articles other than those listed should immediately request rulings upon the classifications under which they may or may not be produced.

The above paragraph is modified to the extent that goods in process of manufacture may be completed to prevent actual loss. Goods in process, however, do not include compounds which may be on hand especially prepared for specific purposes. These compounds should be worked over for the production of essential articles. The control of production applies equally to orders or commitments which may be in hand. Orders on hand for non-essential articles may either be cancelled or held in abeyance subject to further instructions from the War Industries Board.

Forms for use in making applications for classifications of articles or uses will be supplied by the War Service Committee upon request, stating number required. (Address, 52 Vanderbilt avenue, New York City.) These applications should be made out in triplicate and forwarded to the War Service Committee of The Rubber Industry, 808 Colorado Building, Washington, D. C. A ruling will then be obtained from the War Industries Board and transmitted to the applicant.

Export—The pledge provided in paragraph 10, Circular 24, is not required to cover export shipments, but manufacturers are required to satisfy themselves that shipments are to be exported by personal inspection of export license.

CONTROL OF PRODUCTION FOR VARIOUS CLASSES.

CLASS I.

Production of all rubber products for the Government is limited only by orders in hand except that all rulings of the Conservation Division of the War Industries Board apply to this class unless a special exception is made by the Rubber Section of the War Industries Board.

Crude rubber consumed will be replaced in full under War Trade Board plan "A" Allocation. (See THE INDIA RUBBER WORLD, October 1, 1918, page 13.)

CLASS II.

Sufficient production of articles in this class is authorized to supply essential requirements of those engaged in industries on the preference list of the War Industries Board designated as Division "A," and individual manufacturers who have been given preferential treatment designated as Division "B."

These lists will be revised from time to time according to decisions of the War Industries Board. Applications may be made as hereinbefore provided for rulings covering either industries or individual concerns.

ARTICLES

Aircons, tension
Bags
Bat
Gas main
Bellows
Conveyor
Elevator
Emergency
Transmission
Stitched canvas
Belts
Hog beater
Vanner
Blankets, printers'
Bolsters
Brush settings
Cable, electrical insulated
Cement
Cloth
Waterproof
Card
Cutting rubbers
Injuriograms
Screen
Sheet
Gaskets
Tubing
Gloves
Acid
Electrical
Hard rubber goods
Turnery jigs and accessories
Turnery separators
Blades, doctors'
Laminates and extrudes for chemical industries

Hard rubber goods
Disks, water meter
Electrical
Fountain-pen stock
Pipe and fittings
Rod
Sheet
Submarines
Insulating accessories
Ventilating apparatus
Jars and accessories
Textile
Tubing
Hose
Acid, air-brake, air drill, car heating, chemical, coke, deck, engine and tender, gasoline, hot, oxygen and acetylene, pneumatic, radiator, sand-blast, spray-steam, submarine, suction, vacuum, water
Mittens
Molded goods
Packing
Pulley, sheave filing
Rolls and roll covers
Sleeves, dredging
Straps, deckle
Tires
Tubes, grain drill
Valve balls
Valve disks
Valves
Washers
Wrapped goods

CLASS II—DIVISION A.

PREFERENTIAL INDUSTRIES

Aircraft
Armament
Army and Navy, Arsenals and Navy Yards, Class I
Army and Navy, Outfittings and Camps, Class I
Army (small)
Blast furnaces
Boats and shoes
Brass and copper
Chain
Chemicals
Coke
Cotton compressors
Cranes
Drugs
Electrical equipment
Explosives
Farm implements
Ferro alloys
Fertilizers
Fire brick
Food
Food containers
Foundries
Gums
Hospitals (See public institutions and buildings)
Ice
Incandescent and fluorescent
Laundries
Machine tools
Medicines
Mines, coal, Class I
Mines, producing metals and ferro-alloy, Class II
Newspapers and periodicals
Oil and gas
Public institutions and buildings
Public utilities
Pulp and paper
Railways
Ships
Soap
Steel-making furnaces
Steel-plate mills, Class I
Steel-roller mills
Surgical supplies
Textiles
Tin plates
Tobacco
Toluol
Tools
Twine
War and Navy, departments
Wire rope and rope wire
Wool, textile, non-wool

CLASS II—DIVISION B.

PREFERENTIAL INDUSTRIES

Copy of list of manufacturers under this classification may be obtained from the War Service Committee, Colorado Building, Washington, District of Columbia.

CLASS III

Articles falling under this class may be produced to the extent necessary to meet current demands, unless otherwise specified.

ARTICLES

Athletic goods (complete in themselves)
40% per month of the average monthly 1917 production
Bags
Traveling
Bands
50% per month of the average monthly 1917 production
Waterproof
Combs, hard-rubber
Crates
40% per month of the average monthly 1917 production
Footwear
Boots and shoes
Socks, hosiery and sundries
Garden hose
Total production for October, November, December, 1918, shall not exceed 50% of the total production for October, November, December, 1917
Horsehoes
Horsehoes
Hose for fire protection
Horsehoes pads
40% per month of the average monthly 1917 production

Medical and surgical goods

Medals
Face
Ice
Pulitzer air
Bandages
Bottles, water
Bougies
Bulbs
Dental
Vaccine
Caps
L-r
Test tube
Catheters
Cushions
Invalid
Operating
Dress, dental
Disks, dental bellows
Douche, nasal bulb
Gloves, surgeons'
Gum, bandage
Gutta percha tissue
Irrigator, Turck's stomach
Nipples
Pads
Colostomy
Truss, hard and soft
Tessaries
Plugs, antioxin
Pumps, breast
Respirators
Sheeting
Nursery
Bed
Syringe
Attachments
Hard rubber
Tub
Combination

Syringe

Ear
Fountain
Nasal
Surgeons'
Ulcer
Taps, crutch
Tourniquets
Tubes
Cabin
Brassage
Nasal feeding
Rectal
Stethoscope
Stomach
Valentine
Tubing, syringe
Urinals
Vaporizers
Rings
Dust jar
Lamp
Friction
Soldering
Tires
Italy carriage
Bicycle
Motorcycle
Pneumatic automobile under 6-inch
(In accordance with paragraph
6, Cir. 24, P. D., W. I. B.)
Pneumatic tires, 6-inch and over
Solid motor truck
Solid vehicle (not motor driven)
Sundries (including repair materials)
Tubing (all kinds)
25¢ per month of the average
monthly 1917 production
Wire
Electrical insulated

CLASS IV.

The production of articles listed under this class is absolutely prohibited.

ARTICLES

Bags
Confectioners'
Sponge
Bands, chin
Buckets, fire
Bulbs, perfume
Bumpers, screen
Bust forms
Clips, paper
Collars, swimming
Complexion articles and cloth
Cups, drinking
Feet for furniture
Gloves, household
Garments, bathing
Goggles
Grips, bicycle
Hard-rubber goods
Balls
Bowling
Duck pin
Rugby
Buttons
Corkscrews
Flasks, pocket
Funnels
Holders
Caucus
Cigar and cigarette
Pen
Books, crochet
Tack stands
Match boxes
Opener, letter
Lms, hair

Hard-rubber goods
Rings
Embroidery
Teething
Rulers
Scoops, druggists'
Shakers
Shuttles, tating
Specula
Stands, bear-glass
Stethoscopes
Suppositories
Thimbles
Trumpets, ear
Tumbler
Wheels, automobile steering
Mats, bath
Mating ends
Mice, bath
Rollers
Duck, landing
Pails, fire and collapsible
Pillows
Bath
Turkish bath
Rings, umbrella
Softeners, advertising
Specialties, beard
Sprinklers, flower
Tips
Billiard cue
Chair
Screw
Tack
Ventilators, pillow

REGULATIONS GOVERNING THE PRODUCTION OF RUBBER PRODUCTS, ISSUE NO. 2, NOVEMBER 1, 1918.

THESE regulations are supplemental to War Industries Board Circular No. 24 and supersede War Service Committee letter of September 23, 1918, and Regulations Governing the Production of Rubber Products, Issue No. 1, October 1, 1918.

Issue No. 1 of Regulations Governing Production of Rubber Products, dated October 1, 1918, provided for classification of both uses and articles. Since that date the War Industries Board has ruled that the main control shall be through articles, inasmuch as uses will be largely regulated by the Board. There will be a number of exceptions to this general rule where certain articles are considered essential for some purposes and non-essential for other purposes. In determining the essential character of articles the War Industries Board endeavors wherever possible to consider the needs of the producers of the articles as well as the necessity for the articles themselves. The new ruling creates a much simpler form of control, but at the same time places a greater responsibility upon the industry.

Under the new ruling former Class II is eliminated, leaving only Classes I, III and IV, which will now be known as Classes I, II and III.

Class I remains as direct government orders.

Class II becomes a list of articles which may be produced in accordance with the following regulations:

First.—Articles which may be produced in sufficient quantities to meet current needs. (These articles are listed without comment.)

Second.—Articles the production of which is curtailed and which may be produced only to the extent indicated.

Third.—Articles which may be produced only for specific purposes or uses. (See page 75.)

Class III now becomes a list of articles the production of which is prohibited. Under this class are also listed articles which may not be produced for specific purposes even though the production of the same articles is allowed under Class II for other specific purposes. (See page 76.)

The War Industries Board has instructed the War Service Committee of the Rubber Industry to issue the following regulations for the purpose of defining the control program outlined in Circular No. 24 Priorities Division of the War Industries

Board: (See page 12, THE INDIA RUBBER WORLD, October 1, 1918.)

The production of all rubber products will be controlled under three general classifications as to articles and their uses described and listed in the following pages:

1. These regulations supersede all previous regulations, including War Service Committee letter of September 23, 1918, and Issue No. 1 Regulations dated October 1, 1918, and are supplemental to Circular No. 24 issued by the Priorities Division of the War Industries Board, and the spirit of that circular is to be appreciated and followed in applying the regulations and restrictions herein contained.

2. Manufacturers are cautioned to exercise great care in the production of articles permitted for specific uses, and to obtain rulings whenever the proposed use is not specifically authorized or is not perfectly clear.

3. After November 11, 1918, no article shall be produced except as herein provided until a ruling has been obtained. Manufacturers producing articles other than those listed should immediately request rulings upon the classifications under which they may or may not be produced.

4. The above paragraph is modified to the extent that goods in process of manufacture may be completed to prevent actual loss. Goods in process, however, do not include compounds which may be on hand especially prepared for specific purposes. These compounds should be worked over for the production of essential articles. The control of production applies equally to orders or commitments which may be in hand. Orders on hand for non-essential articles may either be cancelled or held in abeyance subject to further instructions from the War Industries Board.

5. The volume or quantity of production when not specifically limited to a definite amount must in no case exceed the normal current demand, and it is incumbent upon manufacturers to satisfy themselves that stocks will not accumulate, either with themselves, their dealers, jobbers or distributors, or ultimate consumers.

6. As it is obviously impossible to prepare at one time complete lists of articles, the lists herein are subject to revision from time to time by additions or reductions.

7. Forms for use in making applications for classifications of articles or states will be supplied by the War Service Committee upon request, stating number required. (Address, 52 Vanderbilt avenue, New York City.) These applications should be made out in triplicate and forwarded to the War Service Committee of the Rubber Industry. A ruling will then be obtained from the War Industries Board and transmitted to the applicant.

8. Export.—The pledge provided in Paragraph 10, Circular No. 24, is not required to cover export shipments.

All articles may be produced for export, including articles listed in Class III, but in cases where the production is curtailed the total amount produced for both domestic and export business must not exceed the amount indicated. Manufacturers are required to satisfy themselves that shipments are to be exported by personal inspection of export licenses.

9. The articles listed in Classes II and III are arranged in alphabetical order with the exception of general groupings such as hard-rubber goods, molded goods, etc. Caution should therefore be exercised to look for articles under the groupings if not found in the general list.

10. Articles already made and in stock which are non-essential may be sold.

Articles already made and in stock used for both essential and non-essential purposes may be sold for essential purposes only.

CONTROL OF PRODUCTION FOR VARIOUS CLASSES.

CLASS I.

Articles to be supplied on *direct orders* received from the following sources:

- Governmental departments.
- Government-controlled railways.
- Government-controlled express companies.
- Government-controlled telephone companies.
- Government-controlled telegraph companies.
- The American Red Cross.
- Allied Governments (Official).

Production of all rubber products for the above is limited only by orders in hand except that all rulings of the Conservation Division of the War Industries Board and Provisions of Class III apply to this class unless a special exception is made by the Rubber Section of the War Industries Board.

Crude Rubber consumed will be replaced in full under War Trade Board plan "A" Allocation. (See page 13, THE INDIA RUBBER WORLD, October 1, 1918.)

CLASS II.

Articles which may be produced in accordance with the following regulations and in accordance with regulations promulgated by the Conservation Division of the War Industries Board.

FIRST.—Articles which may be produced in sufficient quantities to meet current needs. (These articles are listed without comment.)

SECOND.—Articles the production of which is curtailed and which may be produced only to the extent indicated.

THIRD.—Articles which may be produced only for specific purposes or uses.

Where the production of any article is expressly curtailed on a percentage basis, the requirements of Class I may be supplied in addition to the restricted amount arbitrarily fixed.

Attention is called to the fact that there are a number of articles listed in Class II without restriction, which would have been restricted were it not for the fact that the Priorities Division has already regulated the industries using these articles, so the demand will automatically be curtailed.

ARTICLES.

Acid tank linings
Approns
Laboratory
Paper mill

Arrows
Sawed
Tension
Used as clothing

Bags
Hat
Gas engine
Gas man
Tearing
Balloons, target
Balloons, toy
Production for November and December, 1918, shall not exceed 30% per month of the average monthly production for 1917.
Bands, stationers
Production for November and December, 1918, shall not exceed 50% per month of the average monthly production for 1917.
Band saw
Flashing machine
Base-ball centers
Bathing caps (see Caps)
Bath tubs
Belting
Hair
Conveyor
Elevator
Tuncry
Transmission
Stitched canvas
Woven cotton
Belts
Cigarette-machine
Fan
Hog-beater
Take-off (magnetic separator)
Billiard cushions
Bladders
Blankets
Lithographers'
Paper mill
Printers
Bolsters
Brush settings
Brushes
Bottlecleaning
Buckets, auto
Bulbs
Faucet
Furnace
Hydrometer
Tank
Bulbs, auto-horn
Production for November and December, 1918, shall not exceed 50% per month of the average monthly production for 1917.
Bumpers, auto and truck
Production for November and December, 1918, shall not exceed 50% per month of the average monthly production for 1917.
Bumpers, for following purposes:
Cement machinery
Cash registers
Cranes and steam shovels
Fessons
Office appliances
Plumbing and heating
Scales
Sewing machines
Sawblades
Cable, electrical insulated
Caps, bathing
Production for November and December, 1918, shall not exceed 50% per month of the average monthly production for 1917.
Camera bulbs and sets
Production for November and December, 1918, shall not exceed 60% per month of the average monthly production for 1917.
Cement, for following purposes:
Aircraft manufacture
Can manufacture
Footwear
Hat manufacture
Hose attachments
Industrial repair work
Laying tiling and masonry
Paint manufacture
Stamp manufacture
Caskets
Baseball
Golfball
Channel rubber sash and glazing
Cloth, card
Cloth, coated, for following purposes:
Automobile
Raffi slater
Ball rules
Embossing
Footwear
Mattresses (see under Medical)
Photographic
Pillows (see under Medical)
Piano and piano player manufacture
Tobacco
Tobacco production
Waterproof (clothing)
Clothing, waterproof
Collars, corset and garter
Connections, gasoline
Cups, billiard-ball
Cups, oil-well pump
Cushions
Billiard
Brass hammer
Sawblades
Cutting rubbers, for printing presses
Diaphragms
Gaskets
Heater regulator
Ink stand
Pump
Screws
Vacuum brake
Diaphragm sheet
Engraving gun
Expansion joints
Erasers
Production for November and December, 1918, shall not exceed 60% per month of the average monthly production for 1917.
Escalator rails
Footwear
Arch supporters
Boots and shoes
Soles, heels and soles
Footwear repair materials
Fountain-pen accessories
Gaskets
Gasket tubing
Gloves
Acid
Electrical
For industrial purposes
Golf-ball centers
Goggles
Grips, motorcycle
Gutta-percha tissue
Hard-rubber goods
Battery jars
Battery jar accessories
Blades, doctor
Brush ferrules
Combs
Production for November and December, 1918, shall not exceed 66 2/3% per month of the average monthly production for 1917.
Containers and carriers for chemical industries
Dental apparatus parts
Dental finishing
Dental
Separating
Slotting and cutting
Water-meter
Cutlery parts
Electrical supplies
Enameling supplies
Fountain-pen stock
Funnels
Holders, pen
Production for November and December, 1918, shall not exceed 50% per month of the average monthly production for 1917.
Ink-well tops
Instruments for the deaf
Medical and surgical supplies
Munition parts
Musical instrument parts
Optical supplies
Pessaries
Photographic parts
Pipe stems
Rod
Rubber-covered rolls
Sheet
Substitutes
Insulating accessories
Insulated appliances
Ventilating apparatus
Supplies for laboratories and schools
Syringes and attachments
Tension meters
Truss-rad parts
Tubing, for electrical work
Water-meter parts
Horse-shoe pads
Production for November and December, 1918, shall not exceed 66 2/3% per month of the average monthly production for 1917.
Horse shoes
Hose
Acid
Sawblades
Approns
Arrows
Cushions
Electrical
Gaskets and vinegar
Cable
Deck

<p>Hose</p> <p>Diving</p> <p>Engine hose</p> <p>Gas</p> <p>Gasoline</p> <p>Oil</p> <p>Oxygen and acetylene</p> <p>Paint and varnish</p> <p>Pneumatic</p> <p>Radiator</p> <p>Sand-blast</p> <p>Spine</p> <p>Steam</p> <p>Submarine</p> <p>Suction</p> <p>Vacuum</p> <p>Water</p> <p>Hose, garden</p> <p>Production for October, November and December, 1918, shall not exceed 50% per month of the average monthly production for October, November and December, 1917.</p> <p>Lining for acid tanks</p> <p>Mallets</p> <p>Mattress, mats of all kinds and matting ends</p> <p>Production for November and December, 1918, shall not exceed 50% per month of the average monthly production for 1917.</p> <p>Medical and surgical goods</p> <p>Antitoxin outfits</p> <p>Atomizer sets</p> <p>Bags</p> <p>Face</p> <p>Ice</p> <p>Poltzer air</p> <p>Raincoats</p> <p>Bottles, water</p> <p>Babies</p> <p>Bells, dental</p> <p>Brushes, massage</p> <p>Bowls</p> <p>Mumifier</p> <p>Capillary-tube</p> <p>Dental</p> <p>Dropnet</p> <p>Nasal</p> <p>Syringe</p> <p>Vaccine</p> <p>Caps</p> <p>Ice</p> <p>Test tube</p> <p>Catheters</p> <p>Crutch tips</p> <p>Cup ends</p> <p>Cups, dental polishing</p> <p>Cups, massage</p> <p>Cushion</p> <p>Invalid</p> <p>Operating</p> <p>Tam, dental</p> <p>Disks, dental-bellows</p> <p>Douche, nasal-bulb</p> <p>Droppers</p> <p>Gloves, surgical</p> <p>Gum</p> <p>Bandage</p> <p>Dental</p> <p>Irrigator, Turk's stomach</p> <p>Mattresses, air</p> <p>Production for November and December, 1918, shall not exceed 60% per month of the average monthly production for 1917.</p> <p>Molded and wrapped goods for artificial limbs</p> <p>Needle pieces, connecting</p> <p>Nipples</p> <p>Pads</p> <p>Colostomy</p> <p>Truss, hard and soft</p> <p>Pessaries</p> <p>Pillows, air</p> <p>Production for November and December, 1918, shall not exceed 60% per month of the average monthly production for 1917.</p> <p>Plugs, antitoxin</p> <p>Points, polishing</p> <p>Pumps, breast</p> <p>Respirators</p> <p>Rings, antitoxin</p> <p>Sheets, bed</p> <p>Sheeting</p> <p>Bed</p> <p>Nursery</p> <p>Sphygmomanometer outfits</p> <p>Stompies, antitoxin</p> <p>Syringes</p> <p>Attachments</p> <p>Hard-rubber</p> <p>Bulb</p> <p>Combination</p> <p>Ice</p> <p>Fountain</p> <p>Infant</p> <p>Nasal</p> <p>Surgical</p> <p>Uterer</p> <p>Tips, crutch</p>	<p>Medical and surgical goods</p> <p>Attachments</p> <p>Belts</p> <p>Choker</p> <p>Drainage</p> <p>Nasal feeding</p> <p>Rectal</p> <p>Stethoscope</p> <p>Stomach</p> <p>Valvulitis</p> <p>Tubing</p> <p>Medical</p> <p>Surgical</p> <p>Syringe</p> <p>Urinals</p> <p>Vaporizers</p> <p>X-ray sheeting</p> <p>Menders for fire hose</p> <p>Mittens for industrial purposes</p> <p>Molded and wrapped goods for the following purposes:</p> <p>Ammunition and explosives</p> <p>Artificial limbs</p> <p>Battery-jar manufacture</p> <p>Calculating machines</p> <p>Can manufacture</p> <p>Cannets</p> <p>Caret, sheeps</p> <p>Cash registers</p> <p>Chemical manufacture</p> <p>Coffins</p> <p>Corsets</p> <p>Dairy and creamery machinery</p> <p>Die and stamping machinery</p> <p>Electrical equipment</p> <p>Food products</p> <p>Hose attachments</p> <p>Laboratories</p> <p>Labeling machines</p> <p>Laundry machinery</p> <p>Life-saving appliances</p> <p>Mining and mining machinery</p> <p>Motorcycles</p> <p>Office appliances</p> <p>Oil and gas industries</p> <p>Oxygen and hydrogen apparatus</p> <p>Packing houses</p> <p>Paper and pulp industries</p> <p>Parts for hand-operated pumps</p> <p>Parts for tire valves</p> <p>Parts for water-bottle nozzles</p> <p>Pharmaceutical manufacture</p> <p>Plumbing and heating</p> <p>Pneumatic tools</p> <p>Potteries</p> <p>Printing press</p> <p>Railway-car builders</p> <p>Railway supplies</p> <p>Refrigerating machinery</p> <p>Sewing machines</p> <p>Shoe manufacture</p> <p>Shoe manufacture</p> <p>Sugar production and refining</p> <p>Submarines</p> <p>Tanneries</p> <p>Textile machinery</p> <p>Textile manufacture</p> <p>Tractors</p> <p>Typewriters</p> <p>Vacuum cleaners</p> <p>Packers, oil well</p> <p>Packings</p> <p>Pedal rubbers</p> <p>Photograph parts</p> <p>Play pipes for fire hose</p> <p>Plugs, automatic-sprinkler</p> <p>Plumbers' specialties</p> <p>Pulleys, sheave filing</p> <p>Pulley, lagging</p> <p>Respirators</p> <p>Rings, for following purposes:</p> <p>Bead (for cast-iron pipe manufacture)</p> <p>(calculating machines)</p> <p>Refrigerating machinery</p> <p>Complings</p> <p>Evaporator</p> <p>Fire</p> <p>Frut-jar</p> <p>Hydraulic and vulcanizing presses</p> <p>Refrigerating machinery</p> <p>Separating machines</p> <p>Sewing machines</p> <p>Typewriter</p> <p>Valve, gutta-percha</p> <p>Rolls and roll covering</p> <p>Rubber, washed and dried, for following purposes:</p> <p>Aircraft</p> <p>Balloons, toy (see Balloons, toy)</p> <p>Cements (see Cement)</p> <p>Cements for food containers</p> <p>Gloves, electrical</p> <p>Gloves for industrial purposes</p> <p>Gloves, surgical</p> <p>Surgical supplies</p> <p>Sheet rubber (other than packings)</p> <p>Production for November and December, 1918, shall not exceed 75% per month of the average monthly production for 1917.</p>	<p>Sponges, rubber</p> <p>Production for November and December, 1918, shall not exceed 50% of the average monthly production for 1917.</p> <p>Sporting goods</p> <p>(Complete in themselves.) Production for November and December, 1918, shall not exceed the percentages specified per month of the average monthly production for 1917.</p> <p>Balls</p> <p>Football 100%</p> <p>Hand 50%</p> <p>Squash racket 50%</p> <p>Tennis 40%</p> <p>Pads, gun-recall 50%</p> <p>Plates, baseball 60%</p> <p>Protectors, baseball 60%</p> <p>Guards, nose 60%</p> <p>Pucks, hockey 60%</p> <p>Strip rubber</p> <p>Production for November and December, 1918, shall not exceed 75% per month of the average monthly production for 1917.</p> <p>Shields, dress</p> <p>Sleeves, dredging</p> <p>Sponge, rubber</p> <p>Stamp, gum</p> <p>Stamps</p> <p>Straps, deekle</p> <p>Friction</p> <p>Splicing</p> <p>Thread and Tape for the tubing</p> <p>Flexible metal hose and tubing</p> <p>Golf-ball centers</p> <p>Shock absorbers (for aircraft)</p> <p>Webbing</p> <p>Tiling, interlocking and inlaid</p> <p>Production for November and December, 1918, shall not exceed 65% per month of the average monthly production for 1917.</p> <p>Tips, pencil</p> <p>Production for November and December, 1918, shall not exceed 60% per month of the average monthly production for 1917.</p>	<p>Tips, tack and screw, for following purposes:</p> <p>Office appliances</p> <p>Plumbing</p> <p>Baby carriage</p> <p>Bicycle</p> <p>Motorcycle</p> <p>Pneumatic automobile, under 6 inches (in accordance with paragraph 6, page No. 22, Circular No. 24, Priorities Div.)</p> <p>Pneumatic tires, 6 inches and over</p> <p>Solid motor, industrial</p> <p>Solid motor truck</p> <p>Solid vehicle (not motor driven)</p> <p>Sundries (incl. repair materials)</p> <p>Sweeper</p> <p>Toys</p> <p>Tissue, gutta-percha</p> <p>Production for November and December, 1918, shall not exceed 50% per month of the average monthly production for 1917.</p> <p>Tubing, stain drill</p> <p>Tube, all rubber, cloth insertion, cloth-covered and braided cover</p> <p>Production for November and December, 1918, shall not exceed 75% per month of the average monthly production for 1917.</p> <p>Tubs, bath</p> <p>Unvulcanized gum (compounded) for following uses:</p> <p>Artificial limbs</p> <p>Bathing caps (see Bathing caps)</p> <p>Brush manufacture</p> <p>Cement for specified purposes (see Cement)</p> <p>Dress shields</p> <p>Hand manufacture</p> <p>Patches</p> <p>Printing rolls</p> <p>Stamps</p> <p>Vacuum cleaner rubbers</p> <p>Valve balls</p> <p>Valve disks</p> <p>Valves</p> <p>Hydrant</p> <p>Pump</p> <p>Toy balloon</p> <p>Wash basins</p> <p>Wetted</p> <p>Wire, electrical insulated</p> <p>Wrapped goods (see Molded goods)</p>
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CLASS III.

Articles considered by the War Industries Board to be in themselves *non-essential*, or *non-essential* for certain purposes.

Under this class are also listed articles which may not be produced for specific purposes even though the production of the same articles is allowed under Class II for other specific purposes.

The production of articles under this class is either absolutely prohibited or prohibited except for permitted uses.

ARTICLES

<p>Anti-rattler</p> <p>Aprons</p> <p>Household</p> <p>Nurse</p> <p>Tourist</p> <p>Bags</p> <p>Camping</p> <p>Confectioners'</p> <p>Sponge</p> <p>Bait, artificial</p> <p>Bands, chin</p> <p>Ribs</p> <p>Blowers, powder</p> <p>Brushes, tooth</p> <p>Buckets</p> <p>Fire</p> <p>Camping</p> <p>Collapsible</p> <p>Bolts, perfumery</p> <p>Bushes, screw (except for uses specified in Class II)</p> <p>Burn forms</p> <p>Chins, poker</p> <p>Collars, swimming</p> <p>Complexion articles</p> <p>Complexion cloth</p> <p>Cups, drinking</p> <p>Feet (except for uses specified in Class II)</p> <p>Flowers, artificial</p> <p>Garments, bathing</p> <p>Gloves (for domestic purposes)</p> <p>Grips, bicycle</p> <p>Hard-rubber goods</p> <p>Hair, artificial</p> <p>Balls</p> <p>Bowling</p> <p>Druck pin</p> <p>Rogue</p> <p>Buttons</p> <p>Corkscrews</p>	<p>Flask, pocket</p> <p>Holders</p> <p>Caustic</p> <p>Clasp and cigarette</p> <p>Hooks, crochet</p> <p>INK stands (not inkwell tops)</p> <p>Matchboxes</p> <p>Openers, letter</p> <p>Pins, hair</p> <p>Rings, embroidery</p> <p>Rulers</p> <p>Scissors, druggists'</p> <p>Shakers</p> <p>Shuttles, tatting</p> <p>Speculas</p> <p>Stands, beer glass</p> <p>Stethoscopes</p> <p>Suppositories</p> <p>Thumbies</p> <p>Thumbers</p> <p>Wheels, automobile steering</p> <p>Kits</p> <p>Comfort</p> <p>Khaki</p> <p>Travelers'</p> <p>Mitts, bath</p> <p>Pacifiers</p> <p>Pads</p> <p>Landing</p> <p>Teething</p> <p>Patls, fire and collapsible</p> <p>Pillows</p> <p>Bath</p> <p>Turkish bath</p> <p>Pistol holsters</p> <p>Pouches, tobacco</p> <p>Protectors, bicycle-frame</p> <p>Rings, umbrella</p> <p>Suiters', beard</p> <p>Specialties, advertising</p> <p>Sprinklers, flower</p>
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Swatters, fly
Thread and tape, for following out
poses:
Novelties
Toys
Tips
Billiard cue
Chair

Tips
Screw
Task, except for uses specified
in Class II)
Top prop
Ventilator, pillow
Wickets, for following purposes:
Wickets
Weather strips

MEETINGS AND COMMUNICATIONS OF THE RUBBER ASSOCIATION OF AMERICA, INC.

THE following letter, dated October 5, was sent to all rubber manufacturers, importers and dealers:

The Executive Committee of The Rubber Association of America, Inc., at a meeting held on Friday, October 4, 1918, passed the following resolutions upon the recommendation of the War Service Committee of the Rubber Industry of the U. S. A.:

WHEREAS, the expenses of the War Service Committee of the Rubber Industry have been greatly increased because of the requirements of the Government in connection with the regulations of the War Industries Board and the War Trade Board, and

WHEREAS, the revenue of The Rubber Association of America, Inc., has materially decreased because of curtailed importations of crude rubber and new methods of packing which have increased the weight per package;

THEREFORE, BE IT RESOLVED that it is the sense of the Executive Committee that the charge for the Rubber Association services in connection with recording guarantees, entering, storing, etc., should be based upon the weight of crude rubber instead of the number of packages, and that the rate be fixed at 10 cents per 100 pounds, and that the same be effective on and after October 10, 1918, and be it also

RESOLVED that the Executive Committee shall continue to administer the funds as economically as possible, always having in mind efficiency as the main consideration for the success of the rubber industry.

In a letter dated October 11, manufacturers, importers and dealers were informed as follows:

Supplementing our letter of October 5 last in regard to the charges for the Rubber Association services in connection with the importation of crude rubber and kindred products, please be advised that all charges will be based on net weight. The charges also will be made on crude rubber and kindred products invoiced on and after October 10, 1918, regardless of when the merchandise was purchased or shipped.

The charge for balata and gutta percha will be the same as for crude rubber, viz.: 10 cents per 100 pounds.

The charge in connection with the importation of gutta siak and pontianak will be five cents per 100 pounds.

SALES OF FREE RUBBER AND ALLOCATION CERTIFICATES.

Manufacturers, importers and dealers were notified by the Committee on Rubber and Kindred Products, on October 9, that the following communication had been received from the War Trade Board:

WAR TRADE BOARD,
WASHINGTON, D. C.

October 8, 1918.

The Rubber Association of America, Inc.,
52 Vanderbilt Avenue,
New York City.

Gentlemen:

Obviously it is important that necessary steps be taken to insure a proper distribution of free rubber now in this country in dealers' and manufacturers' hands or in transit, in order to assure a necessary supply for essential products and to prevent an accumulation of abnormal stocks.

To this end you are requested to immediately inform all importers, dealers, and manufacturers, that hereafter all proposed sales of free rubber and all proposed sales of allocation certificates are to be submitted to the Bureau of Imports of the War Trade Board for approval before being consummated.

A form upon which proposed sales may be reported to the Bureau of Imports for approval is attached hereto.

FRED B. PETERSON,
Director.

It is understood by the Committee that the object of this new regulation is to assure, as far as possible, equitable distribution and control of the existing stocks of "free" rubber and such

rubber represented by allocation certificates that manufacturers might desire to dispose of to the end that large individual accumulations may be prevented.

Therefore, after this date, all sales, as noted, must have the approval of the Bureau of Imports before being consummated.

We are advised by the Bureau of Imports that they are in a position to pass upon these applications promptly, but that approval will only be considered upon receipt of form executed in duplicate, containing the necessary particulars. They therefore request that no application be made by telephone, but solely upon the form prescribed. Supplies of these forms can be secured upon application to The Rubber Association of America, Inc.

MEETING OF THE BOARD OF DIRECTORS.

The Board of Directors and the Executive Committee held a meeting at the Union League Club, New York City, on October 24. Those present were Bertram G. Work, chairman, Harry F. Dunn, J. Newton Gunn, Homer E. Sawyer, Charles A. Daniel, John S. Lowman, Charles T. Wilson, William J. Kelly, Charles J. Davol, John A. Lambert, former presidents George B. Hodgman, Harvey S. Firestone and secretary Harry S. Vorhis.

The meeting was devoted to deliberation on matters of moment to the rubber industry and important decisions were made, one of which was to form a Crude Rubber Division to be composed of firm members. William J. Kelly, chairman *pro tem* of the Outing Committee, in charge of the Second Annual Golf Tournament, reported a balance of \$627 that will be donated to the Smoke Fund.

EXECUTIVE COMMITTEE MEETING.

The Executive Committee elected the following firm members:

FIRM MEMBERS AND REPRESENTATIVES.

The Ravenna Rubber Co., S. K. Elliot, Ravenna, Ohio.
Midcontinental Tire Manufacturing Co., S. B. Wallingford, Wichita, Kansas.

International India Rubber Corp., George W. Odell, South Bend, Indiana.

The Long-Wear Rubber Co., F. W. O'Brien, Elyria, Ohio.

The Lion Tire & Rubber Corp., Thomas Follen, La Fayette, Indiana.

Weldon Roberts Rubber Co., Weldon Roberts, Newark, New Jersey.

The Worthington Ball Co., George C. Worthington, Elyria, Ohio.

Paul Bertuch, Paul Bertuch, 25 Beaver street, New York City.
MacDonald & Co., F. L. W. MacDonald, 454 Montgomery street, San Francisco, California.

Albert V. W. Tallman, Albert V. W. Tallman, 54 Stone street, New York City.

Joosten & Janssen, E. Janssen, 25 William street, New York City.

Sioux City Tire & Manufacturing Co., Charles F. Sawyer, Sioux City, Iowa.

Sampson Tire & Rubber Corp., William MacKay, 318 Van Nuys Building, Los Angeles, California.

Hagemeyer & Brunn, E. M. Brunn, 82 Beaver street, New York City.

The Armstrong Rubber Co., Inc., George F. Armstrong, Garfield, New Jersey.

National Standard Co., W. F. Harrah, Niles, Michigan.

MANUFACTURER'S PLEDGES IN ABEYANCE.

All rubber manufacturers were notified on October 26, 1918, as follows:

The question of pledges required by the Priorities Division of the War Industries Board is at present under consideration with a view to certain modifications. Until the matter has been definitely settled and until you are further advised, you may hold in abeyance all action previously required in relation to pledges.

Applications of Catalysis to Vulcanization.

By André Dubosc.

CAOUTCHOUCS contain besides pure gum a certain number of impurities of which the characteristics are:

1. Saponifiable or unsaponifiable resins with or without rotatory power.

2. Nitrogenous substances in which, besides the proteins isolated by Spence, we find enzymes the oxidizing action of which on the gum, in the presence of air, causes tackiness and destruction.

These substances, for a long time, have been considered injurious and attempts have been made, by washing and otherwise to eliminate them as completely as possible.

The production of chemically pure synthetic rubbers from isoprene revealed the impossibility of properly vulcanizing them and gave rise to the thought that the proteins and the resins which were lacking were essential in effecting vulcanization.

The same negative results were obtained with plantation gums from which, either during coagulation or by intensive washing, all foreign matters had been removed.

It therefore seemed quite important to allow a certain quantity of resins and proteins to remain in the gum so as to free the gum from destructive enzymes.

Following Weber's researches the importance of the proteins in rubber was suspected but their action was considered more physical than chemical, something like the action that Seligmann attributed to the elastic matter of caoutchouc.

On the basis of microscopic analysis, in which the proteins, dyed black by silver salts, are easily visible, Biffin maintained that they play an important part in coagulation, forming a network surrounding globules of pure gum.

Franck, after numerous experiments on *Hevea* latex, shared this opinion.

Other scientists, however, have shown that the proteins are not indispensable in obtaining a good coagulum from the latex.

Jong and Tromp de Haas, for instance, easily obtained the coagulation of the latex of *Castilleja* after removing the proteins by alcohol.

Spence and Crossly obtained perfect coagulation with latex considerably diluted with water, in which the proteins could not coagulate at the same time as the caoutchouc.

Victor Henry Zimmermann, after microscopic examination, concluded that the coagulation of the gum can take place when the proteins are not present.

Barrett declared that in the coagulation with acetic acid, as practiced in plantations, there are two phases, one rich and the other poor in proteins, and that in both phases coagulation goes on equally well.

All these studies dealt only with the physical part played by proteins and neglected their chemical effect, which is much more important.

The first observations along these lines were made by Lock and Bamber.

These scientists, studying the physical constants of purified plantation gums after vulcanization, found that the resistance to breaking of these caoutchoucs was in inverse ratio to their pure gum contents.

The importance of resins and proteins during the vulcanization was then indicated for the first time.

The part they play has been still more clearly described by Beadle and Stevens, and Lothar Weber, at the Congress of Applied Chemistry at New York, in 1912.

From their studies it results:

1. That a caoutchouc, completely free from resin after pro-

longed extraction by alcohol, does not vulcanize and that a minimum of three per cent of resin is necessary for vulcanization to take place.

2. That a caoutchouc, after losing its proteins, vulcanizes very poorly and very slowly; that its breaking strength, compared with an ordinary piece of caoutchouc, is reduced from five to one; and that the coefficient of vulcanization drops from 3.62 to 1.15.

Beadle and Stevens also established other facts of importance, viz.: that if one augments artificially the protein contents or those of nitrogenous matter in a mass of caoutchouc, vulcanization takes place more rapidly, the physical constants, particularly the breaking strength, are increased, and the coefficient of vulcanization becomes higher.

These valuable observations showed conclusively the chemical importance of resins and proteins in vulcanization, as accelerators and vitalizers. Their action is probably catalytic, for, although they clearly stated their results, neither Beadle and Stevens, nor Lothar Weber furnished any explanations.

Later work, done by Eaton and Grantham and published by them last July, has not only confirmed, but has shown the increasing importance of the part played by the proteins and by the resins in the vulcanizing process.

Eaton and Grantham have shown that, under the action of anaerobic bacteria, the proteins of caoutchouc are transformed into a substance which they have not isolated, but which, during vulcanization, diminishes the curing time, acting as an accelerator, and improves the physical constants, acting as a vitalizer. In the presence of antiseptics such as formaline, the bacterial transformation does not take place and acceleration does not occur, although there is a slight increase of the physical constants, which we shall explain later on. The same negative result is found if the caoutchouc is sterilized by steam or by freezing, which is easily explained by the fact that the microbic action on the protein is prevented. When acting similarly on other proteins, such as casein or the peptones, and the proteins precipitated from the serum, results are obtained which, though not identical, resemble acceleration and vitalization.

But it must be remarked that the results obtained are not dependent on the amount of nitrogen in the caoutchouc, and that a sample containing much nitrogen often behaves much worse than another containing considerably less. This is easily explained if we note that the nitrogen can react only under certain conditions determined by the microbic action.

This can all be understood very clearly by referring to the writings of Effront on the action of the proteins and of the diaminated acids under the influence of bacteria or rather of enzymes, which writings were probably unknown to Eaton and Grantham.

The principle announced by Effront is that if one causes the reaction, under proper conditions, of an enzyme or a diastase on a protein, it is divided into fat acids on the one hand and into amines or ammonium compounds on the other. Remembering the studies of Spence, we know that the protein of caoutchouc exists as a conjugated protein, probably a glycoprotein, which by hydrolysis, changes into glycosamine. It is almost certain that it is this substance which originates in the reactions pointed out by Eaton and Grantham, and that it reacts as an accelerator and a vitalizer.

These reactions are therefore due to an amine or to an aminated body, a valuable observation which allows us to understand the chemistry of the reactions to which we have referred.

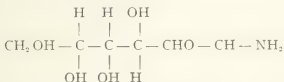
These facts having been stated and the action of the resins and the proteins, in the vulcanization, having been established, let us examine successively the reactions which are produced when we cause sulphur, at the temperature of vulcanization (135 degrees C.), to react on these two substances.

The resins of caoutchouc are present as ethers of cholesterol, acetates of alpha and beta amyrine, acetate of lupeol, that is to say as ethers resulting from the action of a fat acid, acetic acid, on a secondary alcohol, the cholesterol. Under the influence of heat these ethers tend to decompose and the molecule of cholesterol, very complex, tends to split, giving rise to less complex products. This change takes place, as we can verify in the heating of the resins of jelutong, with an abundant liberation of hydrogen and acetylene.

At the temperature of vulcanization, this decomposition is only partial, but the quantity of hydrogen produced is sufficient, in the presence of sulphur, at 135 degrees C., to form considerable sulphydric acid. This reaction was noticed by one of the discoverers of vulcanization, Hancock, and confirmed by Payen, who mentioned it carefully in his studies on caoutchouc.

If, therefore, we study the action of resins on sulphur in glass, at the temperatures of vulcanization, we find that the result is the formation of sulphydric acid in abundant quantity. We shall see later what part this sulphydric acid can play in vulcanization.

The proteins of caoutchouc, isolated for the first time by Spence, appear as conjugated proteins, muscines or glucoproteins, which have been studied by Schmiedberg. They are formed by the union of a carbohydrate with an amine after the fashion of the amino acids, and by hydrolysis, under the action of the enzymes which always accompany it, they can be hydrolyzed, producing glucosamines:



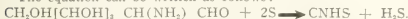
If we prepare the protein of caoutchouc by the method of Spence and Kratz by dissolving crude gum in benzene in the presence of trichloroacetic acid, and then submit the product thus obtained to enzymic action, either with the enzymes of caoutchouc, or with the amylase of Effront, we obtain a substance which behaves, in vulcanization, as the fermented proteins of Eaton and Grantham do and which, when analyzed, presents all the characteristics of glucosamine.

It combines with the isocyanate of phenyl, giving a substance which melts at 211 degrees C. With the phenylhydrazine, it gives a glucosazone, and with hydroxylamine a glucosamine oxime melting at 122 degrees C. Bromine water oxidizes it into glucosamic acid, and nitric acid into isosaccharic acid.

If we take this substance, which is only the product of the transformation of the protein under enzymic action in the caoutchouc, and heat it with sulphur, to the temperature of vulcanization, 135 degrees C., we shall find that it gives rise to:

1. Sulphydric acid;
2. Sulphocyanic acid.

The equation can be written as follows:



Sulphydric acid is easily identified by acetate of lead and nitroprussiate of sodium, sulphocyanhydric acid by perchloride of iron and the protosalts of copper, which give an insoluble precipitate of sulphocyanate of copper.

Thus the action of resins and proteins on sulphur, at the temperature of vulcanization, forms sulphydric acid and sulphocyanic acid.

The formation of this last substance need not astonish us, for it always is formed when sulphur, nitrogenous products and

derivatives of coal are heated together, as in the destructive distillation of coal which contains nitrogen, sulphur and carbon. It is produced also to a considerable extent in the wash waters and in the materials used in purifying illuminating gas, not unlike sulphydric acid.

How can these two substances, which are surely formed by the action of sulphur at 135 degrees C. on a caoutchouc containing a normal quantity of resins and of proteins, produce rapid vulcanization of the gum, increase its resistance to rupture and its polymerization?

Let us examine successively the cases of these two acids.

Harries has recently shown, bringing the theories of Weber and of Oswald into agreement, that vulcanization takes place in two phases: the first one, a phase of adsorption, in which the sulphur is extractible by acetone, but in which the caoutchouc passes from the metastable form to the stable form, characterized by the insolubility of its chlorhydrate in chloroform; then, a second phase, the chemical one, in which the adsorbed sulphur combines with the gum, giving a sulphide of polypropene and becoming unextractible by acetone.

Remembering the principles of colloidal chemistry, sulphur to be adsorbed by a colloid, such as caoutchouc, must itself be in a colloidal state, S_2 , but it is introduced into the mixture to be vulcanized in a polymeric state, S_8 ; therefore, our first task must be to break up its aggregate and bring it to a colloidal state.

Under the influence of heat, this transformation takes place, but slowly and in proportion to the means to be acted on. That is why we can reduce the time necessary for vulcanization by increasing the quantity of sulphur used.

Sulphydric acid, produced by the reactions of the resins and the proteins on the sulphur enables us to obtain colloidal sulphur much more easily.

If we heat sulphur in the presence of air, or of a substance containing oxygen, such as an oxidized caoutchouc or a metallic oxide, we produce sulphurous acid and the sulphide corresponding to the oxide used; it is the reaction which is constantly used in vulcanization with litharge or with oxide of magnesia, both of which are excellent accelerators.

The reactions are produced under the following equations.



The reaction is produced more or less rapidly according to whether the thermic equation, corresponding to the chemical equation, is positive or negative.

With litharge the equation is exothermic and produces +202 calories, the reaction is very rapid and the acceleration is highly accentuated.

With magnesia, the equation is endothermic and requires the addition of 328 calories, but this fault is compensated for by the considerable quantity of occluded air which light magnesia contains. It is to this occlusion that this substance owes its accelerating power.

With oxide of zinc the reaction is clearly endothermic, and as this substance contains little or no occluded air, it remains a simple charge and has no accelerating action.

The same is the case with most of the metallic oxides whose thermic equation is negative, in the case of formation of sulphurous acid.

In presence of sulphydric acid, the sulphurous acid thus produced reacts in the production of colloidal sulphur and of water.



It is the classical reaction which is applied constantly in the purification of illuminating gas.

The formation of colloidal sulphur adsorbable by caoutchouc is thus explained, its rapidity of formation being the function of the rapidity of formation of sulphurous acid.

On the other hand, we must not forget that sulphydric acid

and sulphurous acid are gases; they therefore obey the laws of Graham and diffuse through the mass of caoutchouc with a rapidity which is inversely proportional to the square root of their densities.

The reaction of formation of the colloidal sulphur, which results from their reciprocal action, is produced not on the surface but in the whole mass of the caoutchouc. Now, the adsorption, first phase of the vulcanization, is the more rapid the better the sulphur is mixed in the mass. We can easily understand that, under conditions similar to those which we have described, the adsorption would take place very rapidly and an

acceleration of vulcanization would take place as a result.

As has been shown by these summary notes, the presence of resins in virgin caoutchouc results in rendering easier and more rapid the formation of adsorbable colloidal sulphur, the formation of which is very slow under the influence of heat alone.

The resins accelerate vulcanization, as litharge does; it transforms polymeric sulphur into sulphurous acid, they transform it into sulphydric acid, diffusable gases which, reacting one on the other in the interior of the mass of gum, produce adsorbable colloidal sulphur, the only sulphur that can vulcanize caoutchouc.

(To be continued.)

What the Rubber Chemists Are Doing.

DEVULCANIZATION OF CAOUTCHOUC BY HEXAMETHYLENE TETRAMINE.

AN interesting experimental demonstration of the devulcanization of caoutchouc by formation of hexamethylene tetramine in the gum is described by André Dubosc in "La Caoutchouc et la Gutta-Percha," August 15, 1918, of which the following is an abstract.

Previous experiments have shown that hexamethylene tetramine is capable, under proper conditions of quantity and pressure, of removing sulphur chemically combined with caoutchouc.

In the present demonstration advantage was taken of the fact that caoutchouc is easily penetrated by gases.

A sample of vulcanized caoutchouc was reduced to 100 mesh and by prolonged acetone extraction all free sulphur was removed; extracted with cold ammonium sulphide and thoroughly washed; extracted with chloroform and with alcoholic potash followed by washing with 95 per cent alcohol so as to remove all faticies which contain combined sulphur. The sample thus prepared being successively treated alternately with ammonia gas and formaldehyde gas, the formation first of trimethylene triamine was effected with liberation of water vapor and heat. This body having been formed, the caoutchouc was made to absorb a fresh quantity of ammonia to the point of saturation, followed by absorption of more formaldehyde gas. Pentamethylene tetramine was thus formed, also a certain quantity of water vapor and rise of temperature resulted. Then ammonia gas was again absorbed in excess followed by formaldehyde. The combination between the two gases and the pentamethylene tetramine produced by the preceding reaction took place almost immediately with evolution of heat, and hexamethylene tetramine was formed. The caoutchouc noticeably increased in volume, and gained practically 12.75 per cent in weight.

The rubber was next subjected in an autoclave for six hours to steam pressure at seven atmospheres. Following this the rubber was washed and sheeted until perchloride of iron gave no reaction of sulphocyanic acid. On a sample dried at 100 degrees C. the combined sulphur was determined by the Henriques-Bertrand method. Before treatment the rubber showed 2.723 per cent combined sulphur; after treatment, 2.478 per cent, or a loss of 92.104 per cent of the combined sulphur.

VULCANIZATION RESEARCHES.

Vulcanization experiments, carried out during the last quarter of 1917 in the Department of Agriculture, Federated Malay States, as reported by B. J. Eaton, resulted as follows:

The retardation of vulcanization caused by an excess of acetic acid in the case of slab is comparable with the results obtained with crépe, namely, very little.

Sodium bisulphite slightly retards the rate of cure of both crépe and slab. The use of sodium bisulphate in slab is to obtain a pale-colored, rapidly curing rubber, superior in tensile properties to ordinary pale crépe. This cannot be effected by allowing the coagulum to mature in the open, since darkening occurs,

probably on account of the large amount of oxidizable substances and the greater amount of oxidizing enzyme remaining in the slab.

Since the researches carried out by the writer have shown the presence of vulcanization accelerators to be actually present in latex and retained in the raw rubber under certain conditions of preparation, in addition to those formed by the decomposition of the proteins in the maturation of slab and rolled up wet sheet, etc., it was considered advisable to ascertain whether these accelerators were removed to any extent when the matured slab was subsequently créped and dried. Experiments were therefore carried out in which the matured slab was cut up into thin worms and air-dried and subsequently mixed directly with sulphur for vulcanization. Comparative samples of matured slab were converted to crépe and dried.

Little or no difference was obtained between the rate of cure of the slab cut into worms and dried and that converted into crépe, which shows that little or none of the vulcanizing accelerators is removed by the normal washing and créping of the matured slab. In fact, the créped slab in each series of the experiment vulcanized slightly more rapidly than the "wormed" slab. It was observed that a certain development of "spot" disease occurred invariably in the "wormed" slab (after worming), due to the exposure to the air combined with the slow drying of the worms, and this may have been responsible for the slightly retarded cure, since the writer has shown previously that the organisms causing "spot" disease retard the rate of cure of a fast-curing rubber.

The rates of cure of 16 specimens of sheet, known to have been prepared by coagulation of the latex with alum, varied from one and three-quarters to four and a half hours, which gives a very good idea of the lack of uniformity of such rubber.

COAGULATION WITHOUT CHEMICALS.

In a recent lecture delivered before the Malang Agricultural Society, reported in "De Indische Mercuur," G. J. Zuyderhoff discussed a half dozen principal methods employed for the coagulation of rubber latex, namely: (1) the wild Paré method, its imitation methods by (2) D. MacGillivray, (3) Sanders Birnie, (4) Wickham, (5) Lash van Goengong Toengal, and (6) Clignet's electrical method. The author considers that none of these methods of coagulation are entirely satisfactory and has devised a new method without the use of chemicals. His reasons as stated for undertaking this work were: the high price of acetic acid; the possibility of increasing the intrinsic value of the rubber product, and the preservation of occluded serum in the coagulum and its putrefaction into products of value affecting the rate of cure and physical properties along the line of research developed by Eaton and Grantham.

Zuyderhoff's method as quoted from his lecture is as follows:

The latex is heated in an enameled coagulating basin over a charcoal fire until full evaporation has taken place. The cakes thus produced are put into a long wooden case and air is blown in over them. They are alternately submitted to heat and dry cold and then the mass is tested in the open air.

With a heating appliance placed beneath the wooden case the best results were obtained by (1) heating very moderately underneath and blowing dry air above the cakes, (2) by simply sending heated air over the cakes.

The principal difficulty is to prevent the formation of a film on the upper surface which hinders coagulation of the mass beneath it. This can be done by keeping the upper surface in movement, using the air current to actuate a fan connected to a light wooden rod running the length of the wooden case above the cakes, and having scrapers attached to it that lightly touch the upper surface and keep it in motion. It seems that this evaporation method succeeds very well in a crepe factory and that no complicated installation is necessary.

The making of "slab" rubber is very simple under proper control of the putrefaction. To do this it is desirable to allow the process to take place in a separate building to prevent all kinds of infection. The upper surface of the cakes should be washed with clean water once every 24 hours. The machines which work up the slabs should also be carefully disinfected.

The author states that the color of the crepe produced by his method was at first very irregular, but this difficulty has been since almost overcome. Mr. Zuyderhoff intends to enlist the aid of a government experiment station for aid in further developing his process.

PURITY OF CASTOR OIL.

The following method for determining the purity of castor oil, reported by "Chemical Abstracts," has been worked out by Cherchefsky. It is based on the critical temperature of solution which is defined as the temperature at which a fat in a suitable solvent becomes turbid when this temperature is above the boiling point of the solvent. The method is as follows: A glass tube ten centimeters long and eight millimeters wide is closed at one end, ten drops of castor oil and 40 drops of ethyl alcohol of 0.8481 specific gravity added, and the tube sealed and attached to a thermometer and placed in a glycerol bath. The bath is then gently heated, using the thermometer as agitator. When a turbidity persists the temperature is read. This is constant for every fat. The following table shows results with mixtures of castor oil and other oils. The critical temperature for castor oil is 66 degrees, and as small an amount as two per cent. of foreign oil raises the critical temperature from three to five degrees.

Kind of Oil.	Per cent of foreign oil in castor oil.									
	2	5	10	15	20	25	50	75	100	
Critical Temperature.										
Colza	71*	76*	82*	92*	109*	136*	155*	188*	202*	
Peanut	72*	78*	81*	90*	105*	120*	140*	186*	197*	
Cottonseed	71*	74*	81*	89*	97*	104*	138*	161*	172*	
Linseed	69*	74*	79*	85*	94*	105*	139*	152*	163*	
Fish	70*	74*	79*	86*	92*	103*	133*	158*	167*	

SEPARATION OF THE INSOLUBLE MATTER IN CRUDE RUBBER.

For the separation of the insoluble matter in crude rubber Stevens and Clayton Beadle employ phenol. A gram of rubber in small pieces is placed in a test tube with ten cc. of solvent and heated slowly, so as to reach 100 degrees C. in an hour, and 140 degrees C. in the next half hour. During this heating a peculiar odor is given off, resembling that of roasted (broiled) meat. After cooling, the solution is diluted with 100 cc. of benzene and the insoluble matter allowed to settle. It is washed twice by decantation with benzene, transferred on a tared filter, washed again with benzene, then with alcohol and water, and dried.

CHEMICAL PATENTS. THE UNITED STATES.

TREATMENT OF TIRES—Tires composed of rubber or rubber-like materials and fiber are placed in open molds in a vulcanizer and entrapped air, gases, and fluids extracted therefrom at an elevated temperature by vacuum, before closing the molds and vulcanizing. (Raymond B. Price, assignor to Rubber Regenerating Co., both of New York City. United States patent No. 1,276,416.)

BRAKE LINING AND PROCESS OF MAKING—The method consists in impregnating a body of fabric with a solution containing asphalt, an oxide of lead, sulphur, and an oxidation accelerator; and then vulcanizing the impregnated fabric under high heat

and pressure. (William D. Pardoe, assignor to Thermoid Rubber Co., both of Trenton, New Jersey. United States patent No. 1,277,108.)

THE DOMINION OF CANADA.

PIGMENTED RUBBER—Process and material of coating pigment dust on an uncured rubber surface, and vulcanizing it under a superimposed layer of metal such as aluminum in sheet or powder form. (The Canadian Consolidated Rubber Co., Limited, Montreal, Quebec, Canada, assignee of Willis A. Gibbons, Flushing, Long Island, New York. Canadian patent No. 184,218.)

THE UNITED KINGDOM.

WATERPROOFING COMPOSITIONS—For tarpaulins, etc., gum tragacanth dissolved in water is mixed with lead acetate or aluminum sulphate. These salts may be mixed and the clear solution of aluminum acetate be applied to the fabric, or the fabric may be treated with the solutions separately and lead sulphate precipitated in the fibers. For lighter fabrics, gum tragacanth is mixed with soap dissolved in alcohol and then with aluminum sulphate or lead acetate. (J. D. Williams, 15 Bodford street, Rhyl, Denbighshire. British patent No. 114,494.)

INDIA RUBBER—Vacuum treatment for removal of fluids from unvulcanized rubber. (W. J. Mellersh-Jackson, 28 Southampton Buildings, London. [General Rubber Co., 1790 Broadway, New York City, U. S. A.] British patent No. 116,322.)

INDIA RUBBER—Coagulated rubber, gutta, chicle and like latex is treated with a selection of organic compounds in order to form in the coagulum an insoluble layer to prevent the passage through it of colloidal nitrogenous matter. (W. J. Mellersh-Jackson, 28 Southampton Buildings, London. [General Rubber Co., 1790 Broadway, New York City, U. S. A.] British patent No. 116,323.)

LATEX TREATING—A vacuum process of drying coagulated or uncoagulated latex. (W. J. Mellersh-Jackson, 28 Southampton Buildings, London. [General Rubber Co., 1790 Broadway, New York City, U. S. A.] British patent No. 116,324.)

INDIA RUBBER—Rubber latex is treated with a member of the benzene series or a derivative thereof, in order to conserve its contained nitrogenous and other constituents and to prevent the formation of slime. For instance, the latex may be treated with 0.2 per cent of beta-naphthol before or after the addition of sulphur, and the product may in addition be given a surface treatment with an alcoholic solution of beta-naphthol. (W. J. Mellersh-Jackson, 28 Southampton Buildings, London. [General Rubber Co., 1790 Broadway, New York City, U. S. A.] British patent No. 116,326.)

AUSTRALIA.

WOOD-PAVING JOINT—A joint of rubber and cork composition, intended to counteract the expansion and contraction of blocks in wood pavements. (W. Stawell and H. C. Nankwell, attorneys of I. Manchester, Victoria. Australian patent No. 4,879.)

OTHER CHEMICAL PATENTS. THE UNITED STATES.

NO. 1,372,010 Method of vulcanizing molded rubber articles. L. J. D. Healy and A. A. Frank, Milwaukee, assignors to The Federal Rubber Co., Cudahy—both in Wisconsin.
1,374,001 Manufacture of sheet rubber. W. Seward, Toronto, Ont., Canada.
1,373,954 Coating composition. C. P. Townsend, Washington, D. C., assignor to General Bakelite Co., New York City.
1,376,113 Leather substitute and process. R. B. Respass, New York City.
1,376,119 Tire filler. F. A. Hager, Portland, Ore.

THE DOMINION OF CANADA.

1,379,990 Dental rubber compound. C. R. Engstrom, Los Angeles, Cal., assignee of S. C. Supplies, East Orange, N. J.—both in the U. S. A.
184,217 Vacuum treatment to withdraw fluids from unvulcanized rubber, etc. The Canadian Consolidated Rubber Co., Limited, Montreal, Que., Canada, assignee of R. B. Price, New York City, U. S. A.

CEYLON.

1,377,777 Improvement in rubber and rubber compounds. General Rubber Co., New York City, U. S. A.
1,350 Separating rubber from rubber-containing material. General Rubber Co., New York City, U. S. A.

- 1,553. Treating latex, process and product. General Rubber Co., New York City, U. S. A.
 1,557. Treatment of rubber-like and similar materials. General Rubber Co., New York City, U. S. A.

NEW ZEALAND.

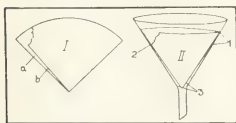
- 39,564. Rubber substitute and process. The Western Rubber Co., 1143 Dock street, assignor to M. Gregory—both of Tacoma, Washington U. S. A.

LABORATORY APPARATUS. LABORATORY WATER HEATER.

A CONTINUOUS supply of hot water is very desirable in the laboratory, particularly if it is always obtainable at will. The illustration shows a very neat and dependable apparatus for this purpose. In operation a simple turn of the hand wheel shown at the right turns on both gas and water, the gas being ignited by the small pilot light projecting over the burner. The burner is gauze-covered. The flame passes up the stack and heats the water descending through a spiral pipe. The ordinary size will heat a pint of water a minute, from 50 to 130 degrees F. Other sizes are furnished. All are compact and easily mounted as wall attachments over the laboratory sink or in some other convenient location. (Buffalo Dental Manufacturing Co., Buffalo, New York.)

FOLDING FILTER PAPERS FOR RAPID FILTRATION.

The following practical method of folding and placing quantitative filter papers in funnels has been described by H. A. Noyes in "The Chemist Analyst." The filter paper is folded as shown in I of the cut.



The amount the paper is folded past (a) depends on the funnel used. The corner is torn off so that when placed in the funnel the crease (b) has no chance of drawing in air which lessens the

rate of filtration. The paper is shown in II folded in this way and properly placed in a funnel. In this position about 300 cc. of filtrate per minute is possible. The rate of filtration depends on these points: (1) good contact of paper with funnel; (2) the absence of a fold of paper extending to the top, thus preventing suction down the side of the filter; (3) increased filtration pull due to point of the filter being centered over the outlet but not touching the sides of the funnel.

ENGALITH, THE ENGLISH GALALITH.

Galalith, a German composition product of casein, is now being manufactured by three British concerns under the name "Engalith." Large quantities of this substance are being made for war purposes, and for export to America, France, Spain, and Italy as well. It is produced in rods, tubes, and sheets, and in some sixty different colors, and is worked up into a great variety of articles for which hard rubber is commonly used. Being slightly hygroscopic, however, it is not adapted for articles that have to come into frequent contact with water or acid, such as knife handles, bathroom tiles or basins, fountain pens, fishing tackle, storage battery cells, and tooth and nail brushes.

Briefly, the process of making Galalith consists in rendering the casein insoluble by the addition of salts and acids. The product is then dehydrated and dried, when, by the addition of formaldehyde, Galalith is obtained. The process is protected by numerous patents.

REPORT OF THE COMMITTEE ON THE POISONOUS NATURE OF SOME ACCELERATORS, AND PRECAUTIONS REGARDING THEIR USE.¹

By Richard D. Earle, Chairman.

OWING to the increasing use of certain organic compounds as accelerators in the vulcanizing of rubber goods, many of which are marketed under misleading trade names, it is desirable to call the attention of rubber manufacturers to the poisonous properties of some of these products and to the fact that disagreeable factory experiences may result unless due precautions are taken.

The more common accelerators used to-day are aniline, hexamethylene-tetramine, para-phenylenediamine, para-nitroso dimethylaniline and thiocarbamide.

ANILINE.

SYMPTOMS OF POISONING. In small amounts, pallor, vertigo, and blueness of lips result. In large doses muscular weakness, strangulation and death.

ANTIDOTES. Fresh air, change of clothing, artificial respiration. Use of milk in diet is recommended. Use of alcoholic stimulants predisposes to poisoning and is excessively injurious after poisoning has occurred.

HEXAMETHYLENE-TETRAMINE.

SYMPTOMS OF POISONING. Rash and inflammation of skin which has been in repeated contact with stock containing this material. In severe cases blisters filled with watery fluid result.

ANTIDOTE. Cleanliness and care in regard to clothing are the best preventives. Change of occupation will cause the rash to disappear, leaving no permanent effects.

PARA-PHENYLENEDIAMINE.

SYMPTOMS OF POISONING. Inhalation of the dust gives the symptoms of a common cold with sneezing and extreme depression. In larger quantities death with symptoms similar to those of ptomaine poisoning. This is probably the most poisonous of all the accelerators proposed up to date.

All efforts should be made towards prevention of inhalation of dust, by means of suction hoods over the mixing mills.

PARANITROSO DIMETHYLANILINE.

SYMPTOMS OF POISONING. This causes a severe inflammation of the skin, increasing in severity according to the exposure.

ANTIDOTE. Change of occupation.

THIOCARBANILIDE.

SYMPTOMS OF POISONING. This material decomposes when heated to vulcanizing temperatures with the formation of phenyl mustard oil, the fumes of which cause pallor, blueness of gums and lips. Probably the least poisonous of the common organic accelerators.

ANTIDOTE. Fresh air.

RECOMMENDATIONS.

1.—Cleanliness is essential. The hands should be washed before eating. Before leaving the factory a shower bath should be taken and a complete change of clothing made.

2.—Mixing mills should be provided with adequate suction hoods, in which an efficient draft is maintained.

3.—Ventilation of press rooms, especially if thiocarbamide is used.

4.—Immediate attention to early symptoms and, if possible, temporary change of occupation in the factory.

5.—Periodical medical examination of employees in mixing and compounding departments, and an educational campaign among employees in regard to non-use of alcohol and chewing tobacco while at work.

6.—In the case of accelerators sold under trade names it is suggested that steps be taken to ascertain the nature of the material.

¹Read at the annual meeting of the Rubber Section of the American Chemical Society held at Cleveland, Ohio, September 11-12, 1918.

The Plantation Rubber Position.

By a Special Correspondent.

WITHOUT question crude rubber prices, supply and demand are the matters of chief present concern, not only to rubber growers and shareholders, but to brokers, merchants and others vitally connected with the plantation industry. The gradual accumulation of large stocks of crude rubber in the East, due to lack of ocean tonnage and the American restriction of imports, together with the consequent continuation of low prices, is causing considerable depression and anxiety. Various circles view the situation in a different light and considerable feeling is developing between the several important producing countries.

Discussion is still rife regarding the restriction of plantation rubber output, but without legislation it would seem to be impossible to enforce it. The 20 per cent reduction agreed upon by members of the Rubber Growers' Association, and to which they have adhered to the extent of 70 per cent of the acreage controlled by members of the association, has not only failed to stabilize the situation, but has opened the way to so-called profiteering on the part of non-members that vitiates the sacrifice to a considerable degree and greatly complicates an already vexed situation. Steps of a much more drastic character appear to be necessary if prices are to be restored to anywhere near their former level, but great difference of opinion exists as to what they should be.

Put briefly, the question for producers is whether to fall in line with the restriction plan of the Rubber Growers' Association, or to endeavor to acquire as much as possible of the trade that is going.

Many small producers, and particularly growers in Ceylon and India, assert that the policy of restriction is designed chiefly in the interests of the big Malayan companies which desire to maintain prices at a high level and let the rubber remain in the trees rather than sell it at 24 or 25 cents per pound, the prices at which the highest grades have been going in Singapore and Colombo. Another group of young producers believe that ocean tonnage is not being allotted fairly and claim that certain large growers and leading merchants have been able to ship considerable consignments when freight space for groups of small growers was either denied or greatly curtailed. They point out that activity in Eastern markets will be seriously reduced if control of the available tonnage by any group of growers is permitted, and state that it will soon be necessary for Eastern governments to intervene, in order that all individual and company planters shall have shipping facilities in proportion to their possessions.

It is common knowledge that the Council of the Rubber Growers' Association has approached the British Government with a view to bringing about compulsory restriction of output accompanied by the fixing of a minimum price in the East. It is claimed that the 20 per cent curtailment covering only part of the acreage in bearing is no longer adequate to meet the situation, but that nearly a 60 per cent reduction is now called for to avert calamity; also that legislation should be resorted to because those who opposed restriction to any extent might now fail to realize the gravity of the present position. While the British Government is giving sympathetic attention to the proposals, it is felt that the negotiations are so protracted as to minimize the relief sought.

Meanwhile many interested parties are engaged in active propaganda and are advocating missions to visit Eastern rubber-producing countries to promote branch organizations of the Rubber Growers' Association, and make the rupee, dollar and guilder companies and private owners realize that membership in a

great international organization consisting exclusively of rubber planters is to their interest, in order that a concerted effort can be made to meet abnormal conditions. They assert that had these companies cooperated with the Rubber Growers' Association and curtailed production 20 per cent, the present demoralized condition of the market would not have occurred, and they paint a very sorry picture of the future of the plantation industry unless a strong organization representing unity of purpose can be effected quickly. Some London interests apparently feel that better support should be accorded by the East and point out that in the absence of a strong organization that can so control production as to guarantee fair prices, the industry cannot be conducted on sound and permanent lines, and that efforts to improve cultivation, tapping and other estate methods through research will prove of secondary importance.

The advocates of restricted production appeared to think that curtailment of American imports on the basis of 100,000 tons per annum would quickly settle the matter as they wished. They pointed out that the world's production in 1918 without restriction was estimated at 300,000 tons, and that if America were going to take only 100,000 tons, and Great Britain only 25,000 tons, the total world's consumption would be only some 160,000 tons, whereas, despite existing restrictions, the rubber output for the current year will not fall far short of 200,000 tons, leaving a surplus of about 40,000 tons. They believed it was clearly the duty of the Straits Settlements and Federated Malay States authorities to prevent the industry which had brought prosperity to Malaya from drifting into financial chaos, and that if the desired results were not forthcoming, the strongest possible pressure should be exerted on the Colonial Office.

As to the advisability of government control, London interests are by no means agreed, however. Prominent bankers and others have openly said they would rather weather any storm than encourage government control because it might be exceedingly difficult to shake off that control after the war. In Ceylon and India, too, most producers take the position that if the future brings better results, all concerned will rejoice in not having resorted to panicky legislation to relieve a temporary chaotic condition, but if it is found that there is no chance of the rubber being shipped, they agree that prompt measures will have to be taken by the planters themselves to restrict production.

Another faction among the large planting interests is openly advocating maximum production and, if necessary, driving small producers into a position little short of ruin. While opponents of this policy admit that rubber growers as a whole will find it exceedingly difficult to meet abnormal market conditions as long as hundreds of small growers are not brought under control, they point out that crushing small and young producers would result merely in a change of ownership, large companies and probably Americans purchasing them and increasing their productive capacity. Complete control of every plantation unit, they claim, is essential to the salvation of the industry.

American restriction of crude rubber imports figures largely in the calculations. All available information points to the probability that the United States Government will only provide rubber for war purposes and essential national needs, and that there is little, if any, likelihood of an early relaxation of the present import restrictions. It is felt that the curtailment of pneumatic tire production to 50 per cent of last year's output in corresponding months may foreshadow similar curtailment in other lines of rubber goods. Furthermore, the ruling of the War Trade Board stipulating that 50 per cent of the imports for August and

September shall come from South and Central America indicates that Eastern plantations will suffer owing to their long distance from the world's greatest manufacturing centers of rubber goods.

Although the maximum prices of first latex crepe and smoked sheet ribbed have been fixed respectively at 63 and 62 cents per pound by the United States Government, these sorts are being sold in the East at 25 and 24 cents, and in many instances at less than the cost of production. It must not be supposed, however, that merchants and brokers are pocketing the difference of 38 cents. New York prices of plantation rubber fluctuate greatly, but are considerably below the maximum prices fixed by the Government, and by purchase in the East, American buyers have been able to obtain their raw material at a lower price than British manufacturers, despite the fact that Great Britain is the largest owner of rubber plantations. This, of course, is largely due to the ocean tonnage which until recently has been available to the United States as against the very restricted amount of British tonnage. And it explains the heavy American stocks in factories, warehouses and in transit, which were announced to be 83,010 tons as of June 30. With London prices ruling about 24 cents higher than those in the East, British manufacturers obliged to purchase their supplies in the London market are placed at a great disadvantage in competition with American firms.

Geographical position and the relative cost of production in various countries are becoming important factors in establishing the average prices realized by growers. For some time past Ceylon appears to have been the favored country, not only because it is probably the cheapest producing country in the world, but very largely on account of more frequent shipping opportunities for consigning rubber to London. On the whole, Colombo and Singapore seem to have enjoyed slightly higher prices than other Eastern markets, Batavia suffering somewhat owing to its position and increasing freight difficulties.

It is natural in the circumstances that opinion in Ceylon should differ somewhat from that of rubber planters elsewhere. Growers there are doubtful that restricted production in Ceylon is necessary, because American buyers, as usual, will naturally buy in the cheapest market. They say that if the present demand for rubber were normal it is doubtful whether the Rubber Growers' Association either could carry out any scheme of restriction, or would consider it wise to attempt to do so. It would probably decide to let the price find its natural level, with the result that many present sources of supply would immediately cease to exist.

Ceylon growers point to the fact that whereas it was widely predicted that a drop in price to about 60 cents per pound would completely eliminate Brazilian rubber, yet although the price has often been lower, this long-threatened industry continues to flourish and supply approximately 40,000 tons annually to various markets. It is believed, however, that if the value were to drop below 48 cents, Brazilian producers would be in a bad way. Were this to happen in normal times it would mean that production had definitely overtaken consumption, which is not the case. Last year the world consumed nearly 240,000 tons of rubber, and if the Central Empires and Russia could obtain all the rubber they want, supplies would be short even on the estimate of possible production. The conclusion is therefore plain that notwithstanding the immense consumption of rubber for war purposes, the war has greatly retarded the industry.

Stocks in Sumatra, Java and Singapore are extremely heavy and there is every indication that more rubber is being produced than can be shipped and consumed under present war conditions. Stocks in London and New York are large considering the restrictions. Unless rubber growers as a whole can get together quickly on a policy of restricted output, or the British Government comes to the rescue with such restriction, price fixing, or both, by legislation, little prospect of prices in the East returning to their normal is to be seen.

Some activity in the forward market for next year and more distant dates has been assumed in certain quarters to indicate that American imports will not be decreased below the 100,000 tons basis. The prices offered for long contracts have been around 30 cents per pound, and although many buyers appear ready to close at that figure, few growers have availed themselves of the opportunity. It is noticeable that many of these would-be buyers desire to arrange for a considerable period of storage, and the suggestion that the names of all such forward buyers be scrutinized with unusual care is a wise one. While many doubtless take only a speculative interest, present market conditions provide an unparalleled opportunity for enemy firms through their agents to purchase rubber at very near cost of production and to carry it as long as necessary with little risk of losing anything thereby.

Viewing the present situation from every angle, and with due regard to the apparent inability of rubber planters as a whole to take concerted action, and the hesitancy of the British Government to intervene, one conclusion stands forth indisputably. It is that the enormous profits of past years in rubber planting are history, and that the time has come when growers must readjust their ideas of rubber values and school themselves to be content with smaller margins of profit such as are customary in the case of most other tropical products. It remains to be seen if the crisis will result in the establishment of factories for the manufacture of rubber goods in Malaya, Ceylon, India or the Dutch East Indies. If such factories supplied only the requirements of the Middle East, an immense saving in ocean tonnage would result.

RUBBER IN UNITED STATES COMMERCE.

NOTEWORTHY changes have been caused by the war in rubber imports and exports for the fiscal year ended June 30, 1918. The year's rubber imports were 389,599,015 pounds, value \$202,800,392; the previous year's imports amounted to 333,373,711 pounds, value \$189,328,674; an increase in weight of 56,225,304 pounds, and in value of \$13,471,718 in favor of 1918.

The majority of the year's imports again came from the Far East (almost entirely plantation rubber), the total weight being 311,909,581 pounds, value \$168,829,521, as compared with 181,431,778 pounds, value \$104,232,552, in the year ended June 30. The great increase in weight and value, 130,477,803 pounds and \$64,596,969, can, to a great extent, be accounted for by the need of avoiding the submarine zone around Great Britain. The imports from London and Liverpool fell to 21,926,945 pounds, value \$12,793,606 from the figures for 1917 (ended June 30 of that year), which were 78,742,217 pounds, value \$51,851,269.

Brazil, largely owing to shipping difficulties, has not done well during the last fiscal year, having sent us only 41,277,914 pounds, value \$14,307,158, as compared with 56,818,966 pounds, value \$25,654,924, the previous year. The figures for the year ended June 30, 1916, were 54,968,227 pounds, value \$25,150,493.

Shipping difficulties also caused imports from Portugal to drop to the very low figures of 538,076 pounds, value \$220,133, from 3,719,703 pounds, value \$1,439,498, for the previous year. Imports of jelutong (Pontianak), duty paid, amounted to 9,994,571 pounds, value \$501,450, from July 1, 1917, to October 31, 1917, while from November 1, 1917, to June 30, 1918, under its classification as duty free we imported 7,481,292 pounds, having a value of \$474,366. Balata imports, which had been much greater in 1917 than in 1916, sank for the year ended June 30, 1918, to figures below those for 1916; for the last fiscal year the figures are 2,449,881 pounds, value \$1,278,610. The improvement in the Mexican situation is one of the chief reasons for the very great increase in the 1918 imports of guayule, 4,307,539 pounds, value \$1,341,095, as compared with the imports for the year ended June 30, 1917, which were only 2,854,372 pounds, value

\$764,484. Shipping difficulties have caused a further remarkable diminution in the imports of the Far Eastern product gutta percha; for the year ended June 30, 1918, they were only 1,151,312 pounds, value \$147,323; the previous fiscal year we had imported 2,021,794 pounds, value \$332,223, and in the twelve-month ended June 30, 1916, 3,188,449 pounds, value \$342,226.

The decrease in scrap rubber imports is striking; for the year ended June 30, 1918, we imported only 13,980,303 pounds, value \$1,019,222; the previous year we imported 20,517,328 pounds, value \$1,569,448; in 1911-1912 rubber scrap imports amounted to 26,293,192 pounds, value \$2,095,065.

The total imports of india rubber, gutta percha and allied gums for the year 1918 were 414,983,610 pounds, value \$206,542,236, against 405,431,069 pounds, value \$194,688,303, for 1917.

Exports of india rubber for the year ended June 30, 1918, amounted to about one-third less than for the previous year, the figures for 1918 were 8,208,280 pounds, value \$4,274,543, while for 1917 they were 12,355,898 pounds, value \$7,304,820. The difference between the imports and exports of india rubber for the year 1918 is 381,390,735 pounds. Allowing for the fact that the stocks in store at the beginning of the year and those carried over at the end of the year are unknown, these figures give some idea of the United States' consumption of rubber.

RUBBER GOODS EXPORTS.

The exports of manufactured rubber goods for the year ended June 30, 1918, amounted to \$33,343,181, against \$31,105,075 for the previous fiscal year, being an increase of \$2,238,106.

The value of the automobile tires exported during the year was \$13,977,671, as compared with \$12,330,201 for the year ended June 30, 1917. Tire exports to France rose from \$425,132 (1917) to \$661,648 (1918). During the same period exports to Great Britain sank from \$2,636,654 to \$618,071. The value of the tires sent to Argentina was almost as great as that of those that went to Canada. In 1918 Argentina took tires of a value of \$1,650,340 (in 1917, \$1,301,344), and Canada imported \$1,766,518 worth (in 1917, \$1,485,939). Cuban imports were \$1,019,915 in 1917 and rose to \$1,336,233 in 1918. Two notable increases were to New Zealand and British South Africa. New Zealand imported \$946,804 worth in 1918, against \$689,705 in 1917. South African imports amounted to only \$391,211 in 1917; they were \$93,065 in 1918. Exports of belting, hose, and packing again increased considerably in 1918, amounting to \$4,578,396 as compared with \$3,532,384 in 1917. During the year exports of rubber boots increased phenomenally, while exports of rubber shoes decreased by about 25 per cent. In 1918, boot exports came to \$4,861,213; in 1917 they amounted to only \$1,483,379 (1,559,598 pairs in 1918, 600,455 pairs in 1917); in 1918, shoe exports decreased to \$913,128, against \$1,716,225 in 1917 (1,244,170 pairs in 1918, 3,356,484 pairs in 1917). The exports of insulated wires and cables in 1918 were in value \$5,716,275, compared with \$7,192,204 for 1917.

AGATIT.

A new rubber-like material, said to be, in fact, a new regenerated rubber product, has been perfected at the University of Leipzig. It is supplied either in emulsion or colloidal solution, for convenience in many applications, or as a solid. The latter form is said to be much used in packing for condensers and on U-boats. It also serves successfully as a substitute for leather as it can be nailed or sewed. Rubber gloves for medical purposes are made largely of agatit. ("Automotive Industries.")

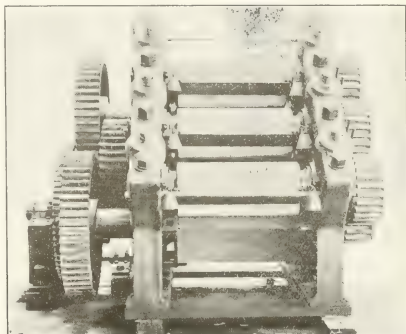
RUBBER TIRES IN THE FEDERATED MALAY STATES.

Oldfields Dispensaries, Limited, Ipoh, Federated Malay States, are preparing to manufacture rubber tires and other allied products. Activity in rubber manufacture in the Far East is no doubt due at the present time to the prevailing high prices and shipping difficulties, and other rubber factories will probably be established in the same general locality.

THE EXTRACTION OF GUAYULE RUBBER.

THE mechanical extraction of guayule rubber consists, briefly, in reducing the shrub to pulp and separating the rubber by flotation. The product is then desinated, sheeted, and dried, ready for shipment to the rubber manufacturer.

In outline, the method employed consists in submitting wet shrub repeatedly to the action of a special grinding machine, with six corrugated rolls of varying degrees of fineness. By this treatment the shrub is reduced to a suitably comminuted state for the second operation or pulping, which is effected in a pebble mill. This may be described as a metal tumbling barrel, in which a quantity of rounded flint pebbles by their motion triturate the charge to an impalpable fineness. The pebble mills for guayule work operate with about 1,500 pounds of Norway pebbles. The mill is charged about two-thirds full with water and fiber, and is revolved at about 30 turns per minute. After one or two hours the pulping is complete and the rubber thoroughly liberated from the cellular fiber. From the pebble mill the charge is dropped through a grating door into a trough, which leads the rubber and begasse into a central tank; thence it is elevated by conveyor to the skimming tanks, where water is added in



Crush Machine of Machine Co.

GUAYULE CRUSHER

large volume and the rubber allowed to separate by rising to the surface; then it is floated off and conducted to large settling tanks, in which it is allowed to soak for five or six days. By that time most of the woody fiber entangled with the rubber becomes water-logged and separates by sinking out on the bottom.

The begasse, or ground fiber, and dirt, which settles in the skimming tanks, are washed out through traps and the begasse screened and further dried for use as fuel. The fairly clean rubber from the settling tanks is well washed and sheeted in ordinary rubber washers for removal of adhering fiber or dirt. The final process consists of air-drying the rubber to a definite guaranteed moisture content, 20 per cent for example, or it may be rendered essentially dry by use of vacuum drying apparatus.

MANUFACTURE OF LITHOPONE IN ITALY.

A Milanese company has been formed, says the "Weekly Bulletin of the Canadian Department of Trade and Commerce," for the manufacture of white lithopone in a factory at Brescia (Italy). This product was formerly imported from Germany, but Italy has the raw material necessary for its manufacture. It is expected that a considerable quantity will be available for export. The Italian Government has granted the firm five years' exemption from any income tax.

New Machines and Appliances.

SAND-BLASTING BASES FOR SOLID TIRES.

SAND-BLASTING the steel bases of solid tires is now an accepted practice in the manufacture of tires of the solid type, as a perfectly clean base is essential for satisfactory results. This object is obtained in an efficient manner by the sand-blasting process here described. Moreover, the result is a pitted, roughened surface to which the hard-rubber compound adheres with greater tenacity.

The various sizes of tire bases have necessitated the design of two distinct types of apparatus. For the smaller bases, up to eight inches wide by 24 inches in diameter, a cabinet is used into which the bases are placed by hand, through a front door. The bases, mounted on a spindle, revolve under sand-blast guns at a circumferential speed that insures the surfaces being uniformly and thoroughly cleaned. The various widths are taken care of by the use of four sand-blast guns which can be operated independently. On the outside of the cabinet opposite the door is the driving mechanism for revolving the spindle at the proper speed, consisting of tight-and-loose pulley and the necessary reduction gears. A quick-acting air-valve is within easy reach of the operator for turning the air supply on and off. Individual valves for each sand-blast gun serve the purpose of shutting off those guns which are not required for the narrower bases.

A larger cabinet and different procedure is required for bases up to 14 inches wide by 48 inches in diameter. The bases are mounted on an inclined runway, held in an upright position by guide rails, and delivered to the charging side of the cabinet. They are automatically introduced into the cabinet one at a time, and are revolved by rolls. Seven sand-blast guns are mounted in the top of the cabinet, adjustable to the various diameters and width by hand wheels on the outside of the cabinet. When a base is cleaned the operator trips the mechanism which discharges the cleaned base onto a second inclined runway, and automatically takes on another base to be cleaned. The charging, revolving, and discharging operations are entirely automatic except for the timing of the clean, which necessarily is in proportion to the diameter of the bases, and therefore must be determined by the operator.

The sand-blast guns used on both cabinets are of standard design as used in connection with other types of similar apparatus. They are of the induction type, which means that the sand is elevated from a hopper beneath the cabinet to the gun by syphoning action of the air jet. Each gun consumes approximately 67 cubic feet of free air per minute at a most advantageous pressure of 60 pounds per square inch. The abrasive used for sand-blasting falls into a hopper at the bottom of the cabinet. This hopper has four and seven sand-feeding devices corresponding to the number of guns used on the two cabinets. These sand-feeds supply sand to the guns only when the air is turned on, that is, when the gun is in operation. The connection between the sand-feeds and the guns consists of heavy, wire-inserted rubber hose.

As it is essential that an adequate exhaust and dust-collecting system be used, therefore dust-arresters and exhaust-fans are connected to the sand-blast cabinets by galvanized iron piping of sufficient size, producing the desired results. (The W. W. Sly Manufacturing Co., Cleveland, Ohio.)

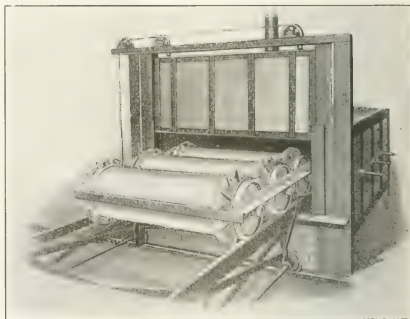
SHERARDIZING POLES AND MOLD CAVITIES.

From the beginning the surfaces of steel poles or mandrels used in the manufacture of open heat articles, such as hose and inner tubes, become corroded and pitted, especially at the ends, thereby limiting their usefulness. This corrosion is due to the action of steam and sulphur gases on the exposed surfaces of the mandrels during the process of manufacture. Sherardizing,

however, eliminates this difficulty and consequently has become a standard practice with regard to inner tubes and mandrels. There is no reason why the process of sherardizing should not be applied with success to hose poles in general. This process will also be found advantageous as a permanent lustrous coating for mold cavities in the manufacture of hot-water bottles, bulbs, balls, toys, and similar molded goods.

Sherardizing or dry galvanizing is a process of metallic sublimation applied by first grinding and polishing steel articles which are then packed in a container, with zinc dust, and subjected to heat. As the result, a deposit of zinc is formed that not only coats the steel surfaces but penetrates them and presents a hard, smooth surface of a silvery color that resists rust and will not peel. The deposit does not alter the dimensions of the mold since the coating is only .002 of an inch in thickness.

It is not necessary that all articles should be ground and polished as this process is applied only to mandrels which must



DRUMS CONTAINING TUBE MANDRELS BEING ROLLED INTO A SHERARDIZING FURNACE.

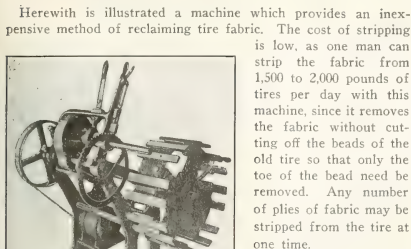
be relieved of all holes to insure a perfectly smooth surface. The standard method as applied to preparing material for nickel plating will usually cover all items.

It is recommended that a standard splicing connection be adopted on hose pole mandrels and all mechanical fittings intended to be sherardized, which would overcome any corrosion in the joints. Furthermore, to extend the life of inner tube mandrels or poles, plugs should be inserted in one end with a hole one inch square for turning in the lathe in order to overcome the ragged edges and the cutting of the mandrel so common when using a grip chuck.

Sherardizing of mandrels is essential at the present time, due to the need for saving steel, as a sherardized mandrel will last almost indefinitely and when worn it can be retreated and restored at a minimum cost. With this fact in view manufacturers have adopted a mandrel of no lighter than No. 13 gage on the very smallest sizes, which will allow regrinding and refinishing several times and still retain enough stock to answer general requirements. (The New Haven Sherardizing Co., New Haven, Connecticut.)

"Rubber Machinery," by Henry C. Pearson, is filled with valuable information for rubber manufacturers. Price, \$6.

THE HIBBS FABRIC-STRIPPING MACHINE.



Herewith is illustrated a machine which provides an inexpensive method of reclaiming tire fabric. The cost of stripping is low, as one man can strip the fabric from 1,500 to 2,000 pounds of tires per day with this machine, since it removes the fabric without cutting off the beads of the old tire so that only the toe of the bead need be removed. Any number of plies of fabric may be stripped from the tire at one time.

The machine is instantly adjustable from the largest to the smallest tire by turning a crank. The motor base can be adjusted so that the slack in the driving belt may be taken up without cutting it. The clutch is of extra large single disk type and the driving gears are encased in heavy gear guards. The fabric shaft has a 12-inch forward and backward movement. The machine usually has a one-horse-power, two-phase motor, but can be furnished with a single-phase motor. The shipping weight is about 700 pounds. (The C. D. Hibbs Rubber Co., Fort Worth, Texas.)

A TIRE REBUILDING AND RETREADING MACHINE.

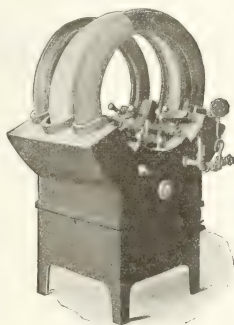
It is a known fact that many carcasses outwear the tread, and if retreated will continue to be serviceable for many miles. Moreover, tire users are urged to conserve their tires, and government regulations having eliminated many sizes, therefore the demand for rebuilding is increasing.

The machine here pictured is of the enbolic type, having three one-third circle cavities with a cross section of $3\frac{1}{2}$, $4\frac{1}{4}$ and $5\frac{1}{4}$ inches, respectively, and will handle any size of tire, from 28 by 3 to 38 by $5\frac{1}{2}$ inches. The cavities are deep enough to cure the tire over the beads when desired. The ends of the cavities are provided with semi-curing flanges, to guard against any breaks in the cure. The boiler is self-contained, using gas or kerosene as fuel to generate steam.

The raised centers of the side of the cavities are so constructed that with the use of air bags and standard bead molds a section can be cured in the same manner as in regular sectional molds in rib, or with a pad in either plain or non-skid design.

In retreading, the time required for cure in each case is that recommended for the repair material used. The pressure on the tread is secured by pressure against the sand bag placed in the tire.

The machine is adapted to build rib-style, non-skid or plain treads; also tread bands may be cured on and half-soles and double treads applied quickly and efficiently. (Zweibel Brothers Co., Milwaukee, Wisconsin.)

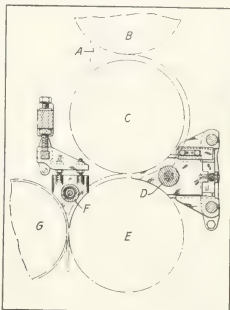


MACHINERY PATENTS.

CALENDER FOR TIRE TREAD STOCK.

THIS machine is a modified four-roll calender designed for the purpose of producing tire tread stock. The calender is provided with pressure rollers that act on the stock before passing between the rolls, and forming a slight bank in front of each roller, thus eliminating air bubbles, equalizing thickness, increasing density and reducing surface imperfections in the calendered rubber strip.

The batch of rubber *A* is fed between rolls *B* and *C* and as the strip of rubber passes under the first banking roller *D*, pressure is exerted on the stock, forming a slight bank on the surface of the strip. After passing between rolls *C* and *E*, the strip is subjected to the action of the second pressure roller *F* that forms a slight bank on the surface of the stock which now passes between rolls *E* and *G* where it receives its final form and finish. (William Kearns, assignor to Morgan & Wright, both of Detroit, Michigan. United States patent No. 1,277,729.)



OTHER MACHINERY PATENTS.

THE UNITED STATES.

- N O. 1,276,041. Expandible mandrel. J. L. G. Dykes, Chicago, Ill.
 1,276,127. Thread-controlling mechanism for sewing balloon fabric. D. S. Sevmour, Oak Park, assignor to Union Special Machine Co., Chicago—both in Illinois.
 1,276,436. Fabric-spreader for tire-making machines. W. C. Stevens, assignor to Livestock Tire & Rubber Co.—both of Akron, O.
 1,276,592. Tire mold. J. A. Swinchart, Akron, O.
 1,276,654. Expanding metal core. W. A. Hirsch, Avalon, Pa.
 1,276,942. Machine for molding tire covers on rotatable core. F. H. Mercer and H. F. H. Bleas—both of Melksam, England.
 1,277,179. Apparatus and method for making hollow rubber articles. R. Beynon, Chicago, Ill., assignor to The Mechanical Rubber Co., New York City.
 1,277,265. Repair vulcanizer. J. F. Schneider, St. Louis, Mo.
 1,277,716. Lifting tongs for tire cores. O. Grosvenor, New York City, assignor to Morgan & Wright, Detroit, Mich.
 1,278,099. Sewing and cementing machine. F. A. Brackett, Manchester, N. H., assignor to W. H. McElwain Co., Boston, Mass.
 1,278,133. Valve. J. R. Gammett, Akron, O., assignor to The B. F. Goodrich Co., New York City.
 1,278,366. Tire-curing machine. P. E. Welton, Cayuga Falls, O., assignor to Birmingham Iron Foundry, Derby, Conn.
 1,278,637. Traveling buck for tire-building machines. I. B. Griffin, Muskegon, Mich.

THE DOMINION OF CANADA.

- 184,874. Mold-aligning device for vulcanizing press. The Canadian Consolrubber Co., Limited, Montreal, Que., Canada, assignee of H. J. Hoyt, Detroit, Mich. U. S. A.

THE FRENCH REPUBLIC.

- 487,160. Improvement in machines for making tires. The Goodyear Tire & Rubber Co., Akron, O., U. S. A.
 487,225. Apparatus and process for manufacturing an improved pneumatic tire. H. B. Wallace.
 487,510. Electrical apparatus for vulcanizing rubber. P. Machet.

PROCESS PATENTS.

THE UNITED STATES.

- N O. 1,276,411. Process for manufacturing rubber tires. R. B. Price, assignor to Rubber Reconstituting Co., both of New York City. (Original application divided.)
 1,277,711. Process of making a flat, endless belt. J. R. Gammett, Akron, O., assignor to The B. F. Goodrich Co., New York City.

THE DOMINION OF CANADA.

- 185,041. Method of making hollow rubber toys. J. E. Abler, Guelph, Ont., Canada.

NEW ZEALAND.

- 40,300. Process for repairing pneumatic-tire covers. H. F. Williams, Belfast street, Christchurch.

New Goods and Specialties.

A PATENTED HAIR-CURLER.

A RECENTLY patented hair curler which is very simple in construction, is shown in the accompanying illustration.

It is formed of a loop of wire, aluminum being used in the one seen, with the ends coming together beneath the band around the smaller end. The wire is flexible enough to permit the



insertion of a rubber ring between the ends, and this ring is positioned within the small loop and held in place by the band. The rubber ring is stretched lengthwise, after the hair is curled around the wire, and is slipped into the inwardly projecting crotch, where it remains securely holding the hair. This device is patented in Canada, although the patentee lives in the States. (M. J. Peppard, Minneapolis, Minnesota.)

THE "ILANASILK" LIFE-SAVING GARMENT.

The great demand of the Government for life-saving garments with which to equip the various units going overseas has stimulated the production of such suits and various concerns are putting them out. Of course, they are all different, yet alike in that they consist outwardly of a rubber garment of more or less similar character. These rubber outside suits are made by the American Rubber Co., Boston, Massachusetts, and by the Hodgman Rubber Co., Tuckahoe, New York, being supplied by them to the different independent companies holding the patents on the several types.

The "Ilanasilk" suit is composed first of all of an

inner jacket padded with kapok which is sufficiently buoyant to maintain a person in the water without sinking. In order to protect the wearer from exposure and wet, the rubber suit is added. The feet of this are weighted to assist further in holding the person in an upright position, and there is an elastic fabric opening at the neck, through which the head is put. The large opening in the front, by which the suit is put on, is closed by twisting it together and folding it back on itself for insertion in a strap extending from the shoulder. The air is forced out of the suit by pulling it slightly away from the neck and squatting. A hood with goggles is attached to protect against rough water and winds. (The Ilanasilk Lifesaving Garment Co., Inc., 27-35 New Jersey Railroad avenue, Newark, New Jersey.)



A NEW SUPERTIRE.

A new cord supertire is illustrated here, each cord of which is separated from the others and insulated by rubber. It is of multiple-ply construction and has a thick



side-wall above the bead. The tread is jet-black and the side-wall, pearl-gray. The new tire is made in five sizes at the present time. (The Amazon Rubber Co., Akron, Ohio.)

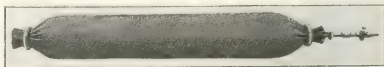
HARD RUBBER CHEMICAL TANK.

A complicated piece of molded hard rubber is shown in the picture below. It is approximately 30 by 10 by 10 inches over all and is used as a chemical tank for an electrolytic process. Earthen-ware boxes were previously used but, while considerably less expensive in initial cost, showed a much greater loss through breakage. Hard rubber was then chosen on account of its ability to withstand the action of acids, its dielectric and mechanical strength, and because hard rubber can be molded more accurately than most other substances. (The B. F. Goodrich Rubber Co., Akron, Ohio.)



THE "STELASTIC" GAS-CONTAINER.

This container for compressed coal-gas used as motor-car fuel is made under the Torkington patents, from hard drawn steel wire with tensile strength of 120 tons per square inch, tinned to prevent rust, in correctly pitched, interlaced spirals. The weaving is as strong laterally as longitudinally, to withstand internal pressures up to 2,000 pounds per square inch. Each end of the fabric is "gathered" together



and over it slipped a forged steel ring electrically welded. Into the gatherings beyond the ring are driven six conical lead wedges, each about three inches long. Inside of the container is a rubber bag made of the best quality of thin rubber. It has a gas pipe at one end and is reinforced with plies of cotton fabric around the pipe seating. The weight of a cylinder four feet long by eight inches internal diameter is 27 pounds complete, and the capacity is 1.39 cubic feet. At 20 atmospheres it contains 27.8 cubic feet of free gas; at 40 atmospheres, 55.6 cubic feet, and at 70 atmospheres (1,000 pounds), 97.3 cubic feet. (Stelastic Tires, Limited, 76 York street, Westminster, London, England.)

ANOTHER CUSHION WHEEL.

Various types of wheels are constantly being devised to mitigate the evils of vibration, and one form of these is the resilient wheel. This one has a rubber cushion (see arrow) inserted between the wood felloe and the solid tire, otherwise being of conventional design and construction. The wheel with the rubber cushion applied is pressed into the outer channel band, the transverse bolts screwed up, and the pressed-on tire put into place. All bolts have countersunk heads on the outside of the wheel, insuring smoothness. (Morand Bros. and Martin Cushion Wheel Co., 800-902 South May street, Chicago, Illinois.)



A NIPPLE FOR SPLIT-PALATE NURSING.

The difficulties with which doctors and nurses and parents have to contend in nursing babies who are unfortunate enough to have split palates have been lessened by the invention of a special nipple, shown in the accompanying illustration. This device has as its base a nipple much like the ordinary kind, over which is built a soft-rubber shield, known as a "comparing shield." The whole fits over an ordinary nursing bottle. (F. A. Hardy & Co., 10 Wabash avenue, Chicago, Illinois.)

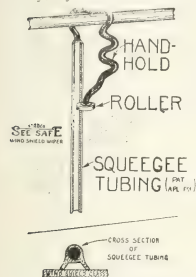


FIRESTONE "HOLDFAST" PATCH STOCK.

An improvement of the "Holdfast" patch which has been on the market for some time is now being put out. The stock is prepared in sheet form so that it may be cut as small as desired to repair tubes of any size. Previously the patches came already cut in special sizes, which made it necessary for dealers to carry several of these. (Firestone Tire & Rubber Co., Akron, Ohio.)

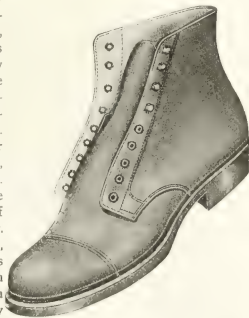
THE "STADCO SEE-SAFE" WINDSHIELD WIPER.

Anybody who allows his windshield to become misty or clouded with rain and snow must be far from civilization with its multiplicity of windshield cleaners. Every few weeks a new model appears, and practically all of them employ rubber on the squeegee principle for cleaning the glass of the shield. The one pictured here is adapted for attachment on the top edge of the wind-shield, but pivots in such a way as to make it possible to operate it straight across the shield or in a semi-circle. The different parts of this device, on which the trade-mark is copyrighted, and on some features of which a patent has been applied for, are plainly indicated in the drawing. The attachment is not expensive and comes packed by the dozen in a box for counter display. (Stadeker Metal Specialty Co., 358 West Madison street, Chicago, Ill.)



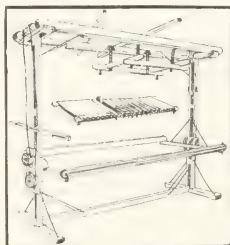
TITAN WORK SHOE.

A new work-shoe, produced at a medium price, while selling for less money than the ordinary leather shoe, has some advantages over the latter which the wage-earner should appreciate. The shoe has an upper of extra heavy duck, reddish-brown in color. The soles and heels are of fiber and rubber of superior wearing quality. The shoe is blucher cut, with one-piece bellows tongue, has a broad high toe with tip, and is an attractive, rugged, easy shoe which should commend itself to wearers. (Apsley Rubber Co., Hudson, Massachusetts.)



RUBBER USED WITH THE "BALKAN" BED.

In THE INDIA RUBBER WORLD for March 1, 1918, was a short account of the work of the Surgical Requisites Association of England in the present war and a letter from Dr. Philip Schidrowitz, the chemist and writer, telling about some of the uses found for rubber in modern surgery and nursing. Some of these

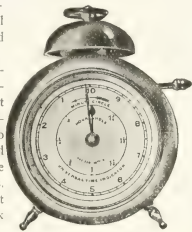


inventions had been made by members of the association, and these included the "double Balkan" hospital bed, of which a sketch has been obtained and is now presented herewith. It is known as the S. R. A. "Williams" double Balkan, and is the invention of two members of the association. A clever arrangement of pulleys and a traveling framework make it possible to raise and lower a patient at will, or his head or feet independently of each other. What is called a girth mattress is used with this bed, made in sections which may be taken apart as required for treatment without moving the patient. Rubber sheeting, tubing for feeding and irrigation, feeding bottles, etc., are used in connection with this bed. (The Surgical Requisites Association, 17 Mulberry Walk, Church St., Chelsea, S. W. 3, London.)

HEAT-TIMING CLOCK FOR MOLD WORK.

The necessity of accurate timing of heats in mold work suggests that the device here illustrated may be of interest. In laboratory work it could be utilized in carrying out chemical tests according to standardized methods.

It closely resembles an alarm-clock in appearance, but in reality it is an interval-timer that can be set for any interval between fifteen seconds and two hours. At the end of the period for which it has been set, the alarm rings and the clock stops. (Victor Electric Corp., 131 East Twenty-third street, New York City.)



RUBBER AND FIBER WELT.

In the making of hand or machine welt shoes, a narrow strip of leather is commonly used for the welt. Some years ago J. N. Moulton invented a welt of rubber, for which he claims that a waterproof seam would result from its use. Recently he has designed a combination welt, which consists of a strip of rubber, skived at one edge, and reinforced for one-half its width with a thickness of heavy duck. This fabric holds the stitches which might tear through a strip not thus reinforced, and the free edge, being elastic, enables the welt to lie flat when stretched around the toe, no matter how small the diameter. (Plymouth Rubber Co., Canton, Massachusetts.)

SPUN GLASS INSTEAD OF RUBBER RINGS.

According to "Die Zeit," a firm in Aussig, Austria, has succeeded in producing a kind of spun glass which answers the same purpose of cork and rubber rings in closing bottles. The invention is said to be very cheap and likely to be of importance.

The Editor's Book Table.

"THE FINANCIER RUBBER SHARE HANDBOOK." FIFTEENTH Edition. June, 1918. The Financier and Bullionist, Limited, London, England. (Cloth, octavo, 880 pages. Price, five shillings net.)

THIS useful annual contains information on stock companies owning rubber plantations no matter where located. It gives their authorized share capital, the amount issued, acreage, etc., together with list of directors. The data are presented in a really serviceable manner. The names, addresses and telephone numbers of the secretaries and agents in London are included.

E. L. Killick, the rubber expert of the "Financier," while admitting in the preface that producers are faced this year with a difficult situation, considers the post-war prospects of the industry excellent owing to the impetus given to motor traction by the war, and still more because enemy and neutral countries have now long been denuded of supplies of crude rubber.

"RUBBER PRODUCING COMPANIES—1918." COMPILED BY THE Mining Lane Tea and Rubber Share Brokers' Association, Limited. "The Financial Times," London, England. (Board covers, octavo, 621 pages. Price, five shillings.)

The sixth edition of this practical handbook has just been issued. It gives the capital authorized and issued, the acreage and tenure, the purchase price, the quantity of rubber tapped, the accounts, etc., of nearly 600 rubber producing stock companies all over the world. It also includes a directory of all the directors, secretaries, and London agents, with the telephone numbers and cable addresses.

In the preface, Mr. Kendall, the editor, urges a great restriction of output but sees a serious obstacle in the fact that such a large number of plantations are native-owned. It is pointed out that one of three different systems could be followed. One might allow only members of the Rubber Growers' Association who restrict their output to export to Great Britain, the European Continent, or the United States of America. A Government order for restriction might be issued, including native-owned estates. The product might be taken over at a price based on the three pre-war years.

"MILITARY AEROPLANES." BY GROVER C. LOENING, B. SC., A. M., C. E. 1918 Revised Edition published by the author, Long Island City, New York. (Cloth, large octavo, 202 pages, illustrated.)

A valuable book by a recognized authority for the student of aviation or airplane design, and a textbook in extensive use at American, British and Canadian aviation schools. The illustrations and diagrams include details of rubber cord shock absorbers.

"THE MOTOR TRUCK AS AN AID TO BUSINESS PROFITS." 1918. By S. V. Norton, manager truck tire sales department, The B. F. Goodrich Rubber Co., Akron, Ohio. A. W. Shaw Co., Chicago, New York, London. (Cloth, 6 by 9½, 509 pages. Price, \$7.50.)

This volume presents a study in five parts, of the motor truck: (1) fitting the motor truck into your business; (2) making your motor truck do more and better work; (3) maintenance that lowers the cost of upkeep (Under this heading are two chapters on "How Tires Can Raise or Lower the Cost of Upkeep," and "Selecting the Right Tires."); (4) building new business with your motor truck; (5) present tasks and future problems.

Briefly outlining the evolution of trade carriers, the author shows that the horse is being supplanted as a motor because he is only two per cent efficient and his cost in the past ten years has increased 143 per cent. The scope of the book has already been indicated. It merits careful study by both prospective and actual truck users because it discusses in a practical, non-technical way every phase of truck cost, maintenance, operation, etc., and the principles of successful goods transportation by motor. The book contains 329 reproductions of photographs illustrating the motor truck in operation under many conditions, which effectively

add to the arguments in the text. There are also included several charts and forms covering inspection, costs of operation, etc.

"ANNUAL CHEMICAL DIRECTORY OF THE UNITED STATES." Second Edition, 1918. Williams and Wilkins Co., Baltimore, Maryland. (Cloth, 6 by 9, 534 pages. Price \$5 net, postpaid.)

This is an extremely valuable reference work for purchasers of chemicals and supplies for manufacturing and laboratory use. The full range of chemical products is covered, including acids, colors, dyes, explosives, extracts, oils and many other products essential for laboratory, technical and industrial purposes. These are listed alphabetically by products and by manufacturers and dealers. Chemical and chemical engineering apparatus, machinery, etc., are similarly listed in both ways. Analytical and consulting chemists and chemical engineers are cataloged both alphabetically and geographically. Laboratories are listed grouped as industrial, institutional, and Federal, State or municipal.

The lists of societies and associations and technical and scientific journals, United States and foreign, with subscription prices, form a new and valuable feature.

DIRECTORY OF THE SPORTING GOODS TRADE. ELEVENTH Edition. Compiled by J. G. Taylor Spink, Charles C. Spink & Son, St. Louis, Missouri. (Paper covers, 16 mo, 236 pages.)

This convenient book gives in compact form a large amount of information as to first-hand makers or suppliers of practically everything which can be denominated under the head of sporting goods, and naturally includes the names of makers of specialties in rubber coming in that category, from boots to bait, from golf balls to push balls. Undoubtedly the book is one which will be referred to frequently by dealers in sporting goods, and similar lines.

NEW TRADE PUBLICATIONS.

THE YARNALL-WARING CO., PHILADELPHIA, PENNSYLVANIA, has just issued a new binder to hold the various catalog sections it publishes from time to time, the use of which enables its customers to have a complete explanatory catalog of its Yarrow hydraulic valves, meters, automatic boiler skimmers, and other engineering devices for power plants, in which this company specializes.

* * *

THE NEW JERSEY ZINC CO., 55 WALL STREET, NEW YORK CITY, has published for distribution to firms interested in zinc four booklets of its "Handy Reference Library of Zinc Products." The titles are "Pigments," "Metals," "Rolled Zinc," and "Zinc Dust," and each describes briefly certain of the company's compounding ingredients, and contains information of interest to users.

* * *

THE 1918 YEAR-BOOK OF THE MERCHANTS' ASSOCIATION of New York is being distributed among the members of the association. Its 288 pages cover for the year ended May 1, 1918, the many varied and important activities of this organization which has for its object "to foster the trade and welfare of New York." Much of the space is devoted to the cooperation accorded the Federal authorities in helping to solve the many new problems arising from the war. The book contains complete alphabetical and classified lists of members. In the latter, Division XLIII comprises rubber, rubber goods and kindred lines. It includes 28 firms representing most departments of the rubber industry. The textile, chemical, electrical and other allied trades are also well represented.

The Obituary Record.

OWNED A CHAIN OF RUBBER STORES.

ISAAC CROCKER, founder of the Crocker System of rubber stores in New England, died at his summer home, Glendale, New Hampshire, September 28, 1918, aged 61 years. The funeral services were held at his home in Providence, Rhode Island.

Mr. Crocker was born in Biddeford, Maine, and his boyhood days were spent in Albany, Maine, where he attended the public schools, completing his education at the Bethel (Maine) Academy. After his graduation he taught school for a short time; then going to Lowell, Massachusetts, he entered the employ of the Lowell Rubber Co., managed by Granville Hayward, whose brother, J. Francis Hayward, owned several rubber stores. Advancing rapidly from errand boy to salesman, and traveling representative, he was given the management of the Lawrence, Massachusetts, store in 1889, and on the death of Mr. Hayward in 1896 he went to Providence, Rhode Island, to take charge of the Hope Rubber Co. store. In 1903 he purchased the business, which comprised eight rubber stores. Since then he has added to the chain and at his death he owned stores in Brockton, Salem, Haverhill, Worcester, Lowell, Lawrence and Fitchburg, in Massachusetts; Manchester and Nashua, in New Hampshire; Providence and Newport, in Rhode Island.

Mr. Crocker was fond of travel. He was an ardent hunter and fisherman, with a fad for collecting arms and weapons. He greatly enjoyed his summer residence at Glendale, in the lake region of New Hampshire, and was, at his death, one of the largest landed proprietors of that summer colony. He made his home in Providence, Rhode Island, but spent much of his time in visiting his various stores.

Mr. Crocker was a generous employer and on various occasions was wont to bring all his employees to some central city to celebrate anniversaries, or the opening of new stores, thus fostering a spirit of comradeship which prevailed the entire system. He was a member of the Odd Fellows, Knights of Pythias, and Knights of Malta.

He is survived by a widow, and a son and daughter by a former marriage. The son, George I. Crocker, was associated with his father in business.

TWENTY YEARS IN RUBBER SCRAP AND MACHINERY BUSINESS.

Daniel L. Barry, a member of the firm of M. Norton & Co., dealers in rubber scrap and second-hand machinery, Charlestown, Massachusetts, who passed away on October 9, 1918, was born in Boston, Massachusetts, fifty years ago. At the age of thirty he engaged in the scrap rubber and second-hand rubber-mill machinery business with his brother-in-law, under the firm name of M. Norton & Co. The company, under his supervision, dismantled a large number of rubber mills throughout the country.

Mr. Barry was a man of pleasing disposition and upright character, highly respected by his business associates and friends. He is survived by his widow, two daughters, and two sons.

A PROMINENT DEALER IN RUBBER CHEMICALS.

Milton Birch, vice-president and treasurer of the Westmoreland Chemical and Color Co. since December, 1910, died on October 16, after a brief illness. He was born April 25, 1858.

The Westmoreland Chemical and Color Co. succeeded the S. P. Wetherill Company, which concern was the successor of S. P. and G. D. Wetherill, Jr., who started in business in February, 1872. Mr. Birch entered their employ in 1878, and on March

31, 1883, was instrumental in organizing the limited stock company which succeeded the original partnership. Shortly after entering the employ of the old concern, Mr. Birch was one of the young men delegated to start the Lehigh Zinc and Iron Co., afterwards the Lehigh Zinc Co., and now part of the present New Jersey Zinc Co.

Mr. Birch had been a member of the Union League Club of Philadelphia since 1886 and about 20 years ago succeeded to his brother's right in the Loyal Legion. He leaves a widow and two children.

GENERAL SALES MANAGER OF THERMOID RUBBER CO.

Harold F. Blanchard, general sales manager of the Thermoid Rubber Co., and the son of J. F. Blanchard of New York City, died at his home in

Trenton, New Jersey,

on October 19,

1918, of pneumonia

which developed after an

attack of influenza.

He was ill but a

few days. His

widow, who was the

daughter of W. J. B.

Stokes, president of

the Thermoid com-

pany, subsequently

passed away on Oc-

tober 27. The

couple leave two

young sons.

Mr. Blanchard was

30 years of age. He

was born in Roches-

ter, New York, and

was a graduate en-

gineer of Lehigh

University. A few

years ago he was

appointed city man-

ager of the Thermoid

Rubber Co. in Phila-

delphia, Pennsylvania,

and about two and a

half years ago was

made general sales

manager of the company

in Trenton. The

deceased was a member

of the Trenton Club

and the Trenton

Country Club.



HAROLD F. BLANCHARD.

DESIGNER OF MAGNET AND MOTOR-OPERATED BRAKES.

Frank I. Parker, of the Cutler-Hammer Manufacturing Co., Milwaukee, Wisconsin, died at his home in Milwaukee, October 18, 1918, at the age of 36 years. His death was due to pneumonia contracted after influenza. He was graduated from the University of Wisconsin in June, 1906, and in July became engineer in charge of production in the magnet and clutch department of the Cutler-Hammer company. His early work was with lifting magnets made by this company, he being responsible for many of the exclusive features of these magnets as well as designing several of its magnet and motor-operated brakes. Since 1911 Mr. Parker has had charge of sales service work on clutch department products. He was made an associate member of the American Institute of Electrical Engineers in 1910 and in 1913 became a member. He is survived by his widow and one child.

KNOWN THE COUNTRY OVER.

Benjamin F. Elson, who a few years ago ended a term of 25 years' service with the Boston Belting Co., died at his home in Brookline, Massachusetts, on the nineteenth day of October, 1918, at the age of sixty-one.

He was born in Boston, Massachusetts, the son of Julius and Rosalie Elson, and was educated in the public schools of that city. His first business experience was in the bookkeeping department of a wholesale woolen house, but he entered a similar department of the Boston Belting Co. about 35 years ago, becoming a salesman later. Naturally ambitious, he left the company to form a partnership with Warren Salisbury, of Chicago, to deal in rubber goods in that city. The firm of Salisbury & Elson lasted but a year or two, and Mr. Elson returned to the Boston Belting Co. as its representative in New York City, which position he held until 1906, when he came to the home office to assume the duties of sales manager. On the death of J. B. Forsyth, in 1909, Mr. Elson was appointed assistant general manager, which position he retained until two or three years ago, when a paralytic shock incapacitated him from further active business.

Mr. Elson was well known in the rubber trade throughout the country. He was an able salesman, ambitious and aggressive, and an earnest worker in the interests of the company. He was a member of the Brae-Burn Country Club, the Boston City Club, the Boston Athletic Association, and the New York Republican Club. He is survived by a widow and two brothers.



BENJAMIN F. ELSON

FORMER DIRECTOR OF HOOD RUBBER CO.

Eugene Jerome Fabens, prominent in banking circles in Boston, and at one time a director of the Hood Rubber Co., Watertown, Massachusetts, died at Salem in that state, on September 26, 1918, from pneumonia. He was born in Salem, September 15, 1883, and early became connected with the banking interests. At the age of 23 he was elected president of the Naumkeag Trust Co., and was the youngest bank president in New England. At the time of his death he was a member of the banking firm of Blake Bros. & Co., devoting a part of each week to managing the New York offices of that concern. He occupied the position of trustee or director in several manufacturing, banking, and insurance companies. He leaves a widow and three children.

SECRETARY OF THE CRESCENT INSULATED WIRE & CABLE CO., INC.

Edgar T. Phillips, secretary of The Crescent Insulated Wire & Cable Co., Inc., Trenton, New Jersey, recently died at his home in the same city.

Mr. Phillips was born near Lambertville, Hunterdon County, New Jersey, on March 30, 1877. He attended the local public schools and also the Lambertville high school, later attending the Stewart Business College of Trenton, completing the commercial course December 20, 1894, and the stenographic course

on June 14, 1895. He shortly afterward accepted his first position with the Crescent company and was elected secretary in 1902, which position he had continued to hold.

SOLD FOOTWEAR IN MAINE

Charles B. Reynolds, salesman for the Converse Rubber Shoe Co. in Maine, died at Bangor, that state, the middle of October, aged 28 years. He formerly occupied a similar position with the Banigan Rubber Co., of Boston, joining the Converse force when the Banigan company's business and that of other branches were consolidated with the United States Rubber Co. Mr. Reynolds is survived by his widow and infant daughter.

A CAPTAIN OF INDUSTRY.

Charles Gustavus Roebeling died of Bright's disease, at the age of 69, at his home in Trenton, New Jersey, on October 5, 1918.

He was president of John A. Roebeling's Sons Co., of Roebeling and Trenton, New Jersey, and of the New Jersey Wire Cloth Co., Trenton, as well as vice-president of John A. Roebeling's Sons Co., New York City, besides being a director of the Mercer Automobile Co.

He was the third son of the late John A. and Johanna (Herting) Roebeling, and was born in Trenton on December 9, 1849. After graduating from Rensselaer Polytechnic Institute in 1871, he became identified with his father's firm, which was already becoming famous through the construction of the Brooklyn bridge. Charles G. Roebeling was the engineering genius of the Roebeling company, of which his brother Ferdinand W. Roebeling was the fiscal genius. At the death of their father the Roebeling business was worth \$150,000 and gave employment to 150 men, today the book value of the company's property is \$50,000,000, and 8,000 men are employed. It was the genius of Charles G. Roebeling that gave his company its leading position in the world; it was he who designed all the intricate, special and costly machinery needed to pass from one to another of the wonderful developments in the steel and insulated wire business.

Notable monuments to the ability of the deceased are the Oil City suspension bridge at Oil City, Pennsylvania, the cables of the Williamsburg suspension bridge in New York, and the erection of "Cleopatra's Needle" in Central park, New York. One of his greatest accomplishments is the town of Roebeling, New Jersey, his own idea. Up to the present the town has cost \$15,000,000 and the end is not yet.

Charles G. Roebeling was an accomplished pianist and violinist, a great lover of automobiling, of books and of paintings. He was the owner of the greatest private collection of orchids in the world and made an amazing success of hybridizing. His health was much impaired by the loss of his only son in the *Titanic* disaster, but he was stricken only last August with the disease which carried him off. It was on the 27th of that month that he took to his bed, from which he seldom arose afterward. He was a member of the Iron and Steel Institute of Mining Engineers, the Engineers' Club of New York, and the Lotus Club of Trenton.

He is survived by two brothers, Colonel Washington A. Roebeling, of Trenton, and Edmund Roebeling, of New York, and one sister, Mrs. Josephine Jarvis of New York.



CHARLES G. ROEBELING.

SALES MANAGER IN NEW YORK.

Robert N. Pierson, for eight years a highly valued member of the sales force of the Voorhees Rubber Manufacturing Co., Jersey City, New Jersey, and for the past six years sales manager of their New York City branch, died from pneumonia at his home, 960 East 14th street, Brooklyn, New York, on Sunday, October 20, 1918, at the age of 30.



ROBT. N. PIERSON.

CASHIER OF THE HOOD RUBBER CO.

Arthur Mack, cashier of the Hood Rubber Co., Watertown, Massachusetts, died October 3, 1918, from pneumonia, following an attack of influenza. He entered the employ of the company in July, 1912, as a clerk, and was elected cashier four years later. He is survived by a widow and a three-months-old son.

THE WILL OF FRANK CAZENOVE JONES FILED FOR PROBATE.

The estate of Frank Cazenove Jones is valued at \$20,000 in personal property. Anna M. Jones, the widow, receives \$25,000 from life insurance, besides furniture, bric-a-brac, and household effects. Each of the two daughters receives \$12,500 from life insurance. To the son are left thirty shares of stock in the Okonite Rubber Co. and twenty shares in the Manhattan Rubber Manufacturing Co. The residuary estate is divided among the members of the family.

**INTERESTING LETTERS FROM OUR READERS.
CONGRATULATIONS FROM A RUBBER MANUFACTURER.**

DEAR SIR—Having just carefully read and then re-read your leading editorial in this month's (October) *WORLD* under the title, "American Rubber Trade Attacked," I desire heartily to congratulate you on the same. It is courageous, yet polite and diplomatic. It states the facts. It touches the spot. It places the blame that such a charge should be made on the source from whence it no doubt came. Again congratulations. Sincerely,

JESSE F. LA DRAE,

Mansfield, Ohio.

CRUDE RUBBER MAN APPROVES EDITORIAL.

TO THE EDITOR OF THE INDIA RUBBER WORLD:

DEAR SIR—I have read with much interest your able and truthful contradiction, under the title, "American Rubber Trade Attacked," of the misleading statements contained in some of the recent London publications.

As one who has been intimately associated with the crude rubber business since long before plantation-grown rubber was an established fact, and one who has made a study of planting from the merchant's viewpoint, I wish to congratulate you upon your concise presentation of the *real facts*.

When the British Government was seeking a plan through which it could supply British-controlled rubber to America, and be sure that it did not reach the enemy, one of its own subjects made the suggestion which was finally adopted. He knew the merchants and manufacturers of America and advised that they be put on honor.

The plan was put into force and met the hearty cooperation of the whole trade, and it was religiously lived up to by both the merchants and manufacturers, although it entailed large expense and put them to great inconvenience.

Your able reply to the fabrications of London writers who have taken their text from disgruntled speculators, should prove to the Britishers the *true position* of the American rubber merchant and manufacturer.

The future of prices, and the future of the growing industry is in the hands of the owners, a large percentage of whom are Londoners, and America is powerless, but she is willing to help out to the best of her full ability and resources; she does not want to see the growers do an unprofitable business; she recognizes their foresight in the beginning, and their industry in bringing the industry to its present state of perfection; she is willing

and anxious to support it, and casts no covetous eyes towards the profits that are due to the people who made it a success.

Sincerely,

ARTHUR W. STEEDMAN.

New York City.

SIZES OF SOLDIERS' ARTICLES.

TO THE EDITOR OF THE INDIA RUBBER WORLD:

DEAR SIR—Recently in an interesting article in one of our daily papers, the statement was made that the French cobblers, who had contracted to repair our soldiers' shoes, had refused to keep their agreement. They claimed that the American fighter's foot gear was so much larger than that of the average Frenchman, that it was impossible to do the work at the price which they, in ignorance of that fact, had agreed upon. So they applied for an increase and it was granted.

No one is really proud of large pedal extremities and most of us generally feel no other way about it. But Uncle Sam must admit the fact this time. A trip through a modern rubber shoe factory will convince even the most skeptical; as we see the four-buckle arctic for which Uncle Sam has contracted to keep his boys' feet both warm and dry, we must acknowledge the fact that the larger sizes predominate.

As we follow the shoe from the laster's bench to the final process, let us take a glance at the ticket which gives the schedule of the day's work.

The eights, nines and tens have the lead and are about equal in number. Closely following come the elevens, after which there is a decided drop back to the sevens which lead the twelves by a small margin. Then, strange but true, we find the thirteens, of course in a much smaller proportion, but still numerous enough to outrange the smallest sizes which make a poor finish upon the ticket. Possibly some fourteens and fifteens are turned out but they are not visible today.

They say that figures do not lie, so even if a man does wear a size larger overshoe than his ordinary shoe, the big sizes are still there.

But we know that the boys over there are our biggest and best, so if they are blessed with good understanding, we have all the more reason to feel proud of them.

Yours truly,

ALBERT W. BARNES.

STATEMENT OF THE INDIA RUBBER WORLD.

Statement of the ownership, management, etc., required by the Act of Congress, of August 24, 1912, of *The India Rubber World*, published monthly in New York, N. Y., for October 1, 1918.

SEVEN OF NEW YORK, U. S. A.

COUNTRY—NEW YORK, U. S. A.

Before me, a notary public in and to the State and county aforesaid, personally appeared E. M. Hoag, who having been duly sworn according to law, deposes and says that she is the business manager of *The India Rubber World*; and that the following is, to the best of her knowledge and belief, a true statement of the ownership, management, etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 443, Postal Laws and Regulations, printed on the reverse of this form, to wit:

That the names and addresses of the publisher, editor, managing editor, and business managers are:

Publisher, *The India Rubber Publishing Co.*, 5 West Forty-fifth street, New York City.

Editor, Henry C. Pearson, 83 Agawam Road, Waban, Massachusetts.

Managing Editor, Henry C. Pearson, 83 Agawam Road, Waban, Massachusetts.

Business Manager, E. M. Hoag, 25 West Forty-fifth street, New York City.

2. That the owners are: (Give names and addresses of individual owners, or, if a corporation, give its name and the names and addresses of stockholders owning or holding 1 per cent or more of the total amount of stock.)

Henry C. Pearson, 83 Agawam Road, Waban, Massachusetts.

3. That the names and addresses of all owners of bonds, mortgages, or other securities are: (If there are none, so state.) None.

4. That the paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in case where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and that this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

Sworn to and subscribed before me this 28th day of September, 1918.

[SEAL]

E. M. HOAG, Business Manager.

Notary Public, Westchester County.

Certificate filed in New York County.

Register Clerk No. 186, New York County.

RECEIVED—NOTES March 20, 1900

NEW INCORPORATIONS.

Acorn Insulated Wire Co., Inc., September 25 (New York), \$300,000. F. Prosser, Bayonne, New Jersey; W. R. Prosser, 250 Lincoln Road, W. George, 102 Dean street—both of Brooklyn, New York. To manufacture insulated wire, etc.

American Rubber Co. of Chicago, October 4 (Delaware), \$1,000,000. F. R. Hansell, Philadelphia, Pennsylvania; J. V. Pimm, S. C. Seymour—both of Camden, New Jersey. Principal office with the Corporation Guarantee & Trust Co., Ford Building, Wilmington, Delaware. To manufacture and deal in rubber and gutta percha, etc.

Audubon Steam Vulcanizing Co., Inc., October 16 (New York), \$1,000. A. Geiger, E. R. Geiger—both of 2600 University avenue, Bronx; M. Brandt, 300 Haven avenue—all of New York City. To repair tires.

Brown Everready Tire Co., Inc., September 24 (Delaware), 3,000 shares capital stock without nominal or par value. N. C. Adossides, C. B. Reid, J. F. Cleveland—all of 42 Broadway, New York City. To manufacture and sell automobile tires.

Burns & Sears Rubber Co., May 15 (Illinois), \$20,000. J. F. Burns, A. R. Sears and R. J. Carnahan. Principal office, Freeport, Illinois. To make, purchase and sell automobile tires and tubes, etc.

Carlisle Sales Co., Inc., September 25 (New York), \$60,000. W. S. Sawyer, 60 Berkeley Place, Brooklyn; A. S. Mortimer, 370 Manhattan avenue, New York City; L. L. Scaserra, 136 Mountaintown avenue, Staten Island—all in New York. To sell tires.

Chicago Rubber Corp., October 7 (Illinois), \$1,000. M. Reinsberg, C. P. Schwartz and U. S. Schwartz. Principal office, 308 South Michigan avenue, Chicago, Illinois. To manufacture, repair, buy, and sell, at both wholesale and retail, automobile tires, supplies, accessories, etc.

Hudson Tire Co., Inc., October 7 (New York), \$15,000. E. O'Beirne, 2425 8th avenue, M. Bohan, 300 West 130th street, J. O'Connor, 111 West 90th street—all of New York City. Principal office, 144th street and Lenox avenue, New York City. To manufacture tires, etc.

Independent Rubber Works, Inc., September 28 (New York), \$10,000. S. and C. Gordon, both 1021, and H. L. Bishop, 919—all on Bedford avenue, Brooklyn, New York. To do a general auto supply business.

K. & S. Canadian Tire & Rubber Co., Ltd., August 22 (incorporated under the provisions of the "Ontario Companies Act," Canada), \$1,000,000. W. H. Cook, J. D. Murray and G. W. Homme. Principal office, 527 Yonge street, Toronto, Ontario, Canada. To manufacture rubber sundries.

Nu-Life Tire Corp., October 5 (New York), \$1,500. I. Prusack, 1817 Pitkin avenue, G. Portnoy, 535 Stone avenue, L. Orlinger, 1578 Eastern Parkway—all of Brooklyn, New York. To manufacture tires.

Peerless Tire Co., Inc., October 22 (New York), \$1,000. C. and K. Pfleger and M. Guion—all of 1222 avenue C, Brooklyn, New York. To deal in tires, etc.

Sweet & Cottrell, Inc., August 26 (New Jersey), \$50,000. E. F. Sweet, West Grove; R. H. Cottrell, T. C. Cottrell, both of Allenhurst—all in New Jersey. Principal office, 550 Broad street, Newark, New Jersey. F. E. Sweet is agent in charge. To manufacture, buy, sell, import, export, and generally deal in tires for vehicles of all kinds and descriptions.

Tire Brokerage Corp., September 30 (New York), \$1,000. S. A. Paul of 2650, J. L. Diamond and D. D. Deutsch, both of 1789—all on Broadway, New York City. To deal in tires and rubber goods.

Tire Mileage Renewer Corp., October 17 (New York), \$10,000. K. G. Brett, 175 Jay street, Albany, New York; B. B. Glidden, E. H. Glidden, both of Leonia, New Jersey. Principal office, Buffalo, New York. To deal in automobile supplies.

Washington Vulcanizing Co., The, July 30 (Indiana), \$10,000. E. K. and M. B. Sudduth, F. B. Cox, C. C. Martin and C. E. Patton—all of Washington, Indiana. Principal office, Washington, Indiana. To buy and sell motor vehicles, trucks, and trailers.

Yankee Leather Tire Co., September 30 (Delaware), \$95,000. C. L. Rimplinger, M. M. Clancy, F. A. Armstrong—all of Wilmington, Delaware. Principal office is with the Corporation Trust Company of America, Du Pont Building, Wilmington, Delaware. To manufacture and deal in treads for automobile tires, etc.

RUBBER TRADE INQUIRIES.

THE inquiries that follow have already been answered; nevertheless they are of interest not only in showing the needs of the trade, but because of the possibility that additional information may be furnished by those who read them. The editor is therefore glad to have those interested communicate with him.

(665.) A reader asks for the address of the manufacturer of the nipple recommended by Dr. Brophy of Chicago for split-palate nursing.

(666.) A subscriber requests the address of manufacturers of small rubber rings.

(667.) A dealer has inquired for lists of manufacturers of perforated rubber mats and rubber bands.

(668.) A correspondent requests prices for tire rebuilding machinery and appliances.

(669.) A reader wishes the addresses of makers of repair stocks containing reclaimed rubber, properly compounded for use in retreading tires.

(670.) A reader asks for the address of the manufacturer of "Ruberine."

(671.) An inquiry has been received as to where rubber substitute can be purchased.

(672.) Request is made for the address of somebody who can supply wood flour such as used by rubber manufacturers.

(673.) A reader asks where he can obtain latex strainers.

(674.) A manufacturer wishes to obtain metallic hose for covering with rubber and cotton.

TRADE OPPORTUNITIES FROM CONSULAR REPORTS.

Addresses may be obtained from the Bureau of Foreign and Domestic Commerce or its district or co-operative offices. Request for each should be on a separate sheet, and state number.

(27,538.) A firm in Italy wishes an agency for waterproof coverings.

(27,562.) A chemical company in England wishes to secure an agency for the sale of carbon black, lithopone, and other chemicals used by the rubber trade.

(27,566.) An agency is desired, on a commission basis, by a man in France for the sale of waterproofed linen, rubber-lined cloth for clothing, and other waterproofed cloth. Correspondence should be in French.

(27,572.) A firm in Spain desires to represent American manufacturers and exporters of automobile accessories. Correspondence should be in Spanish or French.

(27,577.) A business man in Argentina wishes to represent American manufacturers and exporters of tires. Correspondence may be in English.

(27,583.) An agency is desired by a company in Chile for the sale of American automobile accessories. Correspondence may be in English.

(27,592.) A company in Australia desires an agency for rubber goods.

(27,593.) A retail man in France desires an agency for rubber and rubber goods. Correspondence should be in French.

News of the American Rubber Industry.

EMERGENCY HOSPITAL OF THE HODGMAN RUBBER CO.

THE effect of influenza on the rubber mills might have been more serious had not the manufacturers promptly adopted the most efficient methods in combating the disease. Regardless of convenience or expense they have safeguarded the health of their employes and in many instances joined hands with each other in this laudable work.

The value of community of interest was admirably demonstrated last month at Tuckahoe, New York, where the influenza was making considerable inroads among the employes of the Hodgman Rubber Co. Realizing the danger, George B. Hodgman telephoned Frederic C. Hood, whose company at Watertown, Massachusetts, had just experienced a struggle with the disease, asking if doctors and nurses could be secured from that section, as none were available in the vicinity of New York. Prompt and generous was the answer from Mr. Hood who immediately sent to Tuckahoe one of the physicians and two nurses from the Hood Rubber Company's staff, who were later followed by others. Suitable hospital quarters could not be found in town, but fortunately the modern office building of the Hodgman Rub-



HODGMAN OFFICE BUILDING CONTAINING TEMPORARY HOSPITAL.

ber Co. offered ideal accommodations. Forthwith, the second story of the west wing was vacated by the officials of the company and quickly transformed into a modern sanitary hospital. The kitchen and the employes' restaurant in the same building were also placed at the disposal of the hospital staff and the nearby home of F. A. Hodgman was opened for their accommodation. When a sufficient number of beds could not be obtained in New York, an order was sent to Boston and 25 additional cots were promptly delivered by motor truck. Thus Emergency Hospital No. 2, as it is known, was created by the common interest of two well-known rubber companies and the local chapter of the American Red Cross, for the benefit of the mill workers and the citizens of Tuckahoe and nearby villages.

SOCIETY OF CHEMICAL INDUSTRY, NEW YORK SECTION.

The New York Section of the Society of Chemical Industry held a meeting on October 25, at Rumford Hall, 50 East 41st street, New York City. The program consisted of an address by Major H. W. Dudley, British-American Anti Gas Service, entitled, "Gas Warfare Both Offensive and Defensive." The illustrations were official English war pictures. The usual informal dinner was held at the Chemists' Club before the meeting.

SENTENCES IN RAINCOAT FRAUD CASES.

The investigations in the cases of the raincoat makers in New York City charged with various unpatriotic and criminal practices, have resulted to date in the pronouncement of two sentences. Felix Gouled, the army contractor accused of conspiracy with Captain Aubrey W. Vaughan to defraud the Government, was convicted of this charge in the Federal District Court during the week of October 14 and sentenced on October 22 by Judge E. E. Cushman to pay a fine of \$10,000 and serve seven years in the Atlanta penitentiary. His counsel asked that he be released on bail pending an appeal, and this was agreed upon, the amount being fixed at \$25,000, which Gouled furnished. Gouled is facing trial under a further charge of sabotage, and if convicted may be sent to prison for an additional 25 years.

Captain Vaughan was sentenced to two years in prison, upon pleading guilty to a part in the conspiracy. Clemency for him will have to come from the President, the judge stated, as he was sentenced while wearing his full uniform.

The case of the C. Kenyon Co. was also begun on the 22nd of October, in Brooklyn, and nineteen others are to follow.

David L. Podell, the lawyer employed by some of the companies to draw up their agreements, was exonerated from any complicity and received a certificate from the judge and jury to that effect after a six days' trial.

DIVIDENDS.

The B. F. Goodrich Co., Akron, Ohio, has declared its regular quarterly dividends of \$1 a share on common stock, payable February 15, 1919, to stock of record February 5, and of \$1.75 a share on preferred stock, payable January 2, 1919, to stock of record December 20, 1918.

The Hood Rubber Co., Watertown, Massachusetts, has declared its regular quarterly dividend of one and three-quarters per cent on preferred stock, payable November 1 to stock of record October 19, 1918.

The Kelly-Springfield Tire Co., New York City, has declared a quarterly dividend of one dollar (\$1) a share on its common stock, payable November 1 to stock of record October 15, 1918.

The Keystone Tire & Rubber Co., New York City, has received the approval of the Capital Issues Committee of a stock dividend of fifteen per cent, payable December 1 to stock of record November 11, 1918.

The United States Rubber Co., New York City, declared quarterly dividends of two and one and one-half per cent, respectively, on its first and second preferred stock, payable October 31 to stock of record October 15, 1918.

The Westinghouse & Electric Manufacturing Co., East Pittsburgh, Pennsylvania, declared its regular quarterly dividends of one and three-quarters per cent on its common and preferred stock, the former payable October 31 and the latter October 15, to stock of record October 4, 1918.

THE PETLEY RUBBER COMPANY'S FINANCIAL PLAN.

Lynn S. Pease, acting general manager of the Petley Rubber Manufacturing Co., Milwaukee, Wis., reports that a committee consisting of Andrew Bause, chairman, Otto J. Koch, Frank J. Edwards, E. F. Hase and J. J. Hosch, has been formed to work out a plan so that creditors may be paid one hundred cents on the dollar. They claim that the total assets of the company are about equal to the total liabilities, and that the present production is almost entirely for the Government, either directly or indirectly. The company plans to issue notes to its creditors payable in 6, 12, 18 and 24 months, with interest at 6 per cent per annum, accounts of less than \$100 to be paid within 90 days.

GEORGE E. HALL.

AT the annual meeting of the Boston Woven Hose & Rubber Co., held at Cambridge, Massachusetts, October 7, 1918,

George E. Hall, formerly vice-president and general manager of the company, was unanimously elected president and general manager, succeeding Henry B. Sprague, treasurer, who served as president during a portion of the year pending the annual election. Mr. Sprague continues as treasurer and assumes the additional duties of vice-president.

Mr. Hall has been associated with the company eleven years, having previously been identified with the paper manufacturing industry. Coming to the Boston Woven Hose & Rubber Co. in 1907 as general manager, although unacquainted with the rubber industry, he quickly mastered the details and has practically rebuilt the plant, and increased the annual business from \$2,000,000 to \$10,000,000.

Mr. Hall's election to the presidency comes as a fitting tribute to the irrepressible energy and enthusiasm with which he has led his organization in the upbuilding of a business which may easily rank as one of New England's leading industries.

PERSONAL MENTION.

Seneca G. Lewis has been elected vice-president and general manager of the Pennsylvania Rubber Co., Jeannette, Pennsylvania, sharing the office of vice-president with Major C. M. Du Puy, now in France.

H. L. Parmenter has been appointed manager of the Chicago branch of the General Asbestos & Rubber Co., Charleston, South Carolina. He has been in the employ of the company for four years and was previously identified with the manufacturing of packing in the East.

Robert A. Sufferin has been appointed manager of the textile department of G. Amsinck & Co., importers of crude rubber and other products, 90 Wall street, New York City. The textile department will handle cotton goods for foreign export.

George H. Carnahan, president of the Intercontinental Rubber Co., New York City, has been appointed vice-president and a director of The Bayer Co., Inc., 117 Hudson street, the same city, by the Alien Property Custodian who now controls the latter organization.

William Pfeiffer, president of the Miller Rubber Co., F. H. Adams, ex-treasurer of The Goodyear Tire & Rubber Co., C. I. Bruner, president of the First-Second National Bank, all of Akron, Ohio, and Captain Ernest E. Buckleton, president of the Northwestern Rubber Co., Litherlands, Liverpool, England, have recently returned from a hunting and fishing trip north of Quebec.

J. H. Fenton, who was some time ago appointed industrial division manager of the Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pennsylvania, in Los Angeles, California,



GEORGE E. HALL.

is responsible for the activities of the industrial salesmen for the district comprising Southern California, Arizona, New Mexico, and western Texas.

W. H. Hildreth, managing director, Aldens' Successors, Limited, London, England, arrived in New York City last month on a business trip.

A. Powell succeeds H. von Briesen, resigned, as purchasing agent for The Savage Tire Corp., San Diego, California.

J. N. Dine, for five years manager of the Omaha, Nebraska, branch of The Goodyear Tire & Rubber Co., Akron, Ohio, has been promoted to the assistant management of the Chicago branch. He is succeeded in Omaha by C. A. Cramer.

George H. Brush has been elected second vice-president of the Sterling Tire Corp., Rutherford, New Jersey.

Julius Oppenheim is now manager of The Loewenthal Co., rubber scrap dealer, 23 Heyward street, Brooklyn, New York, succeeding Paul H. Loewenthal who has enlisted in the Tank Corps.

J. E. Allen, formerly a salesman for the Braender Rubber & Tire Co., Rutherford, New Jersey, operating out of Chicago, has been made sales manager with headquarters at Rutherford.

George W. Gibbs, formerly advertising manager, is now purchasing agent of the Hodgman Rubber Co., Tuckahoe, New York. F. H. Whitney, who had held this position for fifteen years, has retired to his farm in Florida.

IRVING B. FERGUSON.

IRVING B. FERGUSON, whose name has become familiar to the American rubber industry through his work in connection with the Government's statistical requirements, is a certified public accountant of note.

His name and address will be found on all questionnaires sent out to the rubber trade by the War Trade Board, as the Government's accredited agent in charge of the compilation of these statistics. He has recently received a commission by virtue of which he has taken over some important auditing departments of the War Trade Board.

Mr. Ferguson is a native of New York City and received his early schooling in Paris, Switzerland and Italy. His education, however, was completed in this country, he having graduated from Yale in 1893.

He is a member of the New York Society of Certified Public Accountants and the American Institute of Accountants. His home is in Pelham, Westchester County, New York, and as a member of the Pelham Country Club and the Wykagyl Country Club he enjoys tennis and golf.

AMERICAN COTTON FABRIC FOR AIRPLANES.

At the outbreak of the war, linen was considered the only material satisfactory for covering airplane wings, but after the imported stock now on hand is exhausted, only cotton fabric will be used for the purpose on American airplanes. Two fabrics were adopted, the specifications calling for a strength of not less than 80 pounds per inch, in both warp and filling. The first contracts were placed by the Government in September, 1917. In October and November, 1,480,000 yards were ordered. In January, 1918, the production was 173,000 yards. It is now 1,200,000 yards monthly. Contracts have now been let for 11,513,084 yards of fabric, made of long-staple cotton.



IRVING B. FERGUSON.

TRADE NOTES.

John Royle & Sons, Paterson, New Jersey, have purchased the name, good-will, tools, patterns, etc., of the Clark tubing machine from the estate of Edred W. Clark, Hartford, Connecticut.

The Keystone Tire & Rubber Co., 1877 Broadway, New York City, elected the following directors at the annual meeting of its stockholders: L. Walter Lissberger, Joel Jacobs, Sydney Bernheim, Nathan J. Miller, and Harry H. Jacobson. The capital of the concern has been increased from \$1,500,000 to \$2,000,000.

The Victory Rubber Co., Springfield, Ohio, is completing a two-story factory addition of tile and concrete construction, to be used exclusively for making tires. Modern machinery and equipment are being installed.

G. Amsinck & Co., importers of crude rubber and other products, have removed from 6 Hanover street to 90-96 Wall street, New York City.

The Continental Tire & Rubber Co., 748 St. Charles street, New Orleans, Louisiana, is planning the erection of a factory as soon as permission can be obtained from the Government. It will manufacture Continental tires. George A. Wood is president.

Charles B. Chrystal, importer of minerals, clays, and colors, 11 Cliff street, New York City, has purchased a two-story warehouse at Bishop and Canal streets, Jersey City, New Jersey, to which he will remove as soon as alterations are completed. The new location will give better facilities for handling increasing business.

The Schaefer Rubber Co., 16 East Fourth street, Cincinnati, Ohio, has increased its capital from \$50,000 to \$100,000. The concern maintains a store at 15 East Grand River street, Detroit, also, and the increased capitalization is for the purpose of taking care of its growing trade.

The Sewell Cushion Wheel Co., Detroit, Michigan, has been elected to membership in the Motor and Accessory Manufacturers Association.

The Oriental Rubber and Supply Co., 1166 Bedford avenue, Brooklyn, New York, has increased its capital stock from \$10,000 to \$25,000.

The Federal Rubber Co., Cudahy, Wisconsin, is working on a government gas mask contract on which more than 100 women are employed. In other departments women are being trained to take the places of men wherever possible.

The Paraltic Co. has removed from 609 to 416-417 Swetland Building, Cleveland, Ohio.

S. A. E. ADOPTS MOTORCYCLE TIRE SPECIFICATIONS

The Tire and Rim Division of the S.A.E., at the Cleveland meeting, July 12, 1918, adopted the following motorcycle tire capacities and inflation pressures, these now being adopted by the society also:

Tire Size	Maximum Load. (Pounds per tire.)	Corresponding Inflation Pressure. (Pounds per sq. in.)
2 1/4	175	35
3	235	40
3 1/2	400	45

FORMER BOSTON TIRE MAN RETURNS TO THE HUB.

Thomas R. Burton has been appointed manager of the Boston branch of the United States Tire Co. during the term of the leave of absence granted E. P. Kidder, who is temporarily with the Emergency Fleet Corp. Mr. Burton has been in the tire business since 1900 when he became salesman in Boston for Morgan & Wright. From 1908 until 1911 he was manager of the Boston branch, then branch manager in Pittsburgh, Pennsylvania, and later eastern district manager for the United States Tire Co., which absorbed the Morgan & Wright company. For the last four years he has been located at Atlanta, Georgia, as

branch manager in charge of the business in the South. His return to Boston brings him back among old friends, with whom he is most popular.

CANADIAN NOTES.

THE Dunlop Tire & Rubber Goods Co., Limited, Toronto, Ontario, was one of the prominent exhibitors at the annual Canadian National Exhibition recently held in that city. This concern manufactures tires and inner tubes, rubber heels and soles, mechanical belting and packing, hose, etc. Its various products were extensively displayed in four different booths and attracted merited attention at the exhibition.

Scheuer, Normandin & Co., Montreal, Quebec, are handling in Canada the "Leisure" line of rubber footwear manufactured by the Hood Rubber Co., Watertown, Massachusetts, U. S. A.

The Miner Rubber Co., Limited, Toronto, Ontario, has removed its offices from 146 Wellington street West to 144 Front street West, where it will occupy all of the ground floor, comprising 12,500 square feet of space.

Victor G. van der Linde, until recently development manager of The B. F. Goodrich Co., Akron, Ohio, U. S. A., has resigned in order to take charge of the factory of the van der Linde Rubber Co., Toronto, Ontario. This change has made necessary the further resignation from the vice-chairmanship of the Aircraft Committee of The Rubber Association of America, Inc.

C. H. Cooper, sales manager of the Lynn Rubber Manufacturing Co., Warren, Rhode Island, U. S. A., has been demonstrating the company's foot comfort devices in Toronto recently, at the Robert Simpson Co. store.

Richard Hamer, with the Gutta Percha & Rubber Co., Ltd., Toronto, Canada, holds a research scholarship under the Industrial and Scientific Research Council, appointed by the Canadian Government. The subject of his research was "Aging and Decay of Rubber." The first report has just been completed and deals specifically with "The Direct Examination of Colloidal Rubber Solutions by the Aid of the Ultramicroscope."

Canadian rubber manufacturers held a meeting in October at Toronto, to consider the conservation of rubber by eliminating certain styles of rubber footwear. Canadian manufacturers have for several seasons been doing away with some of their former models, and this and the fact that not as many styles are made in Canada as in the States will lessen numerically the number of styles to be eliminated, as compared with the large number recently listed for elimination in the States. This action is an independent one on the part of the manufacturers, and merits particular commendation for that reason. The changes are to be listed and the final form submitted to the manufacturers first and subsequently to the Canadian War Trade Board for approval.

At a meeting of officials of the Canadian Government on October 22, it was decided to proceed with the plans for raising the Second Victory Loan, the Fifth War Loan, in spite of the prevalence of influenza, it being remarked that the United States had set a splendid example in oversubscribing her Fourth Liberty Loan of \$6,000,000,000 in spite of the great handicap suffered from influenza while the drive was in progress in the States.

The campaign for Canada's Second Victory Loan accordingly began October 28, the amount to be raised having been set at \$500,000,000. Premier Borden bought the first bond but the Duke of Devonshire was the first subscriber by letter.

One of the posters being used shows the heads of the rulers of the four enemy nations above the words: "4 reasons for Buying Victory Bonds." Another reproduces the now famous picture of three French women dragging a plow; above it are the words, "They Serve France." Beneath is the question: "How can I serve Canada?" followed by the convincing answer, "Buy Victory Bonds."

JUDICIAL DECISIONS.

PANTHER RUBBER MANUFACTURING CO. v. I. T. S. CO., Circuit Court of Appeals, Sixth Circuit, March 15, 1918.

The Ferguson patent No. 638,228, for a rubber-heel attachment for boots and shoes, is construed as having a raised marginal portion on the upper side of the tip, leaving a substantial depression in the center. This, it was declared, was not infringed by a heel having shallow scorings or channels in the shape of a shield. (Federal Reporter, Volume 250, page 253.)

FEATHERBERG RUBBER CO. v. MILLER RUBBER CO., ET AL., District Court, N. D. Ohio, E. D., June 26, 1918.

The Willis & Felix patent No. 1,045,234, for a process for making rubber sponges was held invalid because of the insufficiency of the disclosures to enable one skilled in the art to manufacture sponges with commercial success.

The only step that discloses invention is that of curing under steam pressure in order to preserve intact the walls of the cells formed by the expansion of the blowing material until they can be mechanically ruptured.

A like process was used by the Goodrich people in 1903. They later discontinued the manufacture of the article because of the excessive waste.

Willis & Felix did not disclose a workable compound or blowing and moderating material and with the ordinary compounds the process was not workable. The patent was therefore held invalid. (Federal Reporter, Volume 250, page 255.)

BARRETT ET AL. v. SHEAFFER.—Circuit Court of Appeals, Seventh Circuit, January 2, 1918.

The Sheaffer patent No. 1,118,240, for improvements in attachment for self-filling fountain pens, consisting of a spring arrangement to hold the presser bar firmly, independent of the compressible reservoir in connection with a lever-filling device, held valid and infringed as to claims 1 and 2.

Barrett contracted to make 10,000 holders for the Kraker Pen Co. He delivered some of these, understanding that they would be made into an infringing article. It was therefore found that he was guilty of contributory infringement. Interference proceedings are now pending in the Patent Office. No infringement was found in claims 3, 4, 5, 7, and 11. (Federal Reporter, Volume 251, page 74.)

CUSTOMS APPRAISER'S DECISIONS.

TENNIS BALLS.—The duty on tennis balls, imported by A. L. Tuska Son & Co., of this city, is reduced in a decision rendered by the Board of General Appraisers. When entered here, the customs collector levied duty at the rate of 35 per cent ad valorem, the provision for toys in paragraph 342 of the Tariff Act of 1913. The protestants contended for duty at 30 per cent ad valorem under paragraph 266 as manufactures in chief value of cotton; at 25 per cent ad valorem under paragraph 368 as manufactures of grass, straw or weeds, or at 10 per cent ad valorem under paragraph 368 as manufactures of india rubber or gutta-percha, not specially provided for.

It was shown by the testimony that the merchandise is not a toy and analysis proved that cotton was the component material of chief value therein. Accordingly, it was held dutiable at 30 per cent ad valorem under paragraph 266.

ELASTIC BRAIDS.—The collector's assessment of duty on certain elastic braids is upheld in a decision overruling a protest of Calhoun, Robbins & Co., New York City. The appraiser reported that the goods in question consisted of "elastic braids composed of cotton and india rubber threads and of silk and india rubber threads." Duty was assessed at the rate of 60 per cent ad valorem under paragraph 358 of the Tariff Act of 1913. The importers claimed, that the braids were properly dutiable at the rate of 45 per cent ad valorem under paragraph 316, or at the rate of 25 per cent ad valorem under the provision

in paragraph 262 of said act for "fabrics with fast edges, not exceeding twelve inches in width, all of the foregoing made of cotton or other vegetable fiber, or of which cotton or other vegetable fiber is the component material of chief value, or of cotton or other vegetable fiber and india rubber, and not embroidered by hand or machinery." The protest was overruled in view of the record.

REAPPRAISEMENTS.

Reappraisements of merchandise recently made by the Board of General Appraisers follow:

SIAM.—From the United Malaysian Rubber Co., Singapore, exported May 18, 1917, entered at New York, August 10, 1917. File No. 92220. Entry No. 206163-2. McClelland, G. A.: Siam reboil, entered at \$23; reappraised at \$25.25 per picul. Add packing.

JELUTONG.—From Ned. Ind. Boschproducten Maatschappij, Banjermassin, Borneo, exported Nov. 25, 1917; entered at New York March 3, 1917. File No. 90290. Entry No. 127447-2. McClelland, G. A.: Jelutong (ordinary); invoiced at 8.70 florins per picul. Gutta Hangkang; invoiced at 23 florins per picul. Gutta Katiau; invoiced at 16 florins per picul. Entered at same prices plus buying expenses. Reappraised as entered. Add cases on all.

GUTTA PERCHA, ETC.—From Ned. Ind. Boschproducten Maatschappij, Banjermassin, Borneo, exported June 25, 1917; entered at New York October 9, 1917. File No. 92743. Entry No. 230046-2. McClelland, G. A.: Gutta Dotrian; invoiced at 54 florins per picul. Gutta percha; invoiced at 27 florins per picul. Gutta Katiau, first quality; invoiced at 19.50 florins per picul. Gutta percha; invoiced at 26.50 florins per picul. Entered at same prices plus buying expenses. Reappraised as entered. Add cases on all.

GUTTA PERCHA, ETC.—From Ned. Ind. Boschproducten Maatschappij, Banjermassin, Borneo, exported August 11, 1918, entered at New York January 30, 1918. File No. 94280. Entry No. 8649-1. McClelland, G. A.: Gutta percha; invoiced at 27 florins per picul. Gutta Katiau, 1st qual.; invoiced at 19.50 florins per picul. Entered at same prices plus buying expenses and coolie hire. Add cases. Reappraised as entered.

JELUTONG, ETC.—From Ned. Ind. Boschproducten Maatschappij, Banjermassin, Borneo, exported September 27, 1917; entered at New York January 31, 1918. File No. 94282. Entry No. 9009-1. McClelland, G. A.: Jelutong, ordinary, invoiced at 11.20 florins per picul. Gutta Katiau, first quality, invoiced at 19.60 florins per picul. Gutta percha, invoiced at 28.50 florins per picul. Add cases. Entered at same prices plus coolie hire and buying expenses. Reappraised as entered.

GUTTA KATIAU.—From Ned. Ind. Boschproducten Maatschappij, Banjermassin, Borneo, exported March 15, 1918; entered at New York September 2, 1918. File No. 94294. Entry No. 13607-2. McClelland, G. A.: Gutta Katiau, first quality, invoiced at 19.25 florins per picul. Add cases. Entered at same prices plus buying expenses and coolie hire. Reappraised as entered.

RUBBER SPONGE MANUFACTURE—A CORRECTION.

The following in the September issue of this journal was a bit of carelessness on the part of the Editor and merits correction. The statement was: "The equipment for making bath sponges, for example, is just right for sponge rubber in gas masks."

The thought intended was that the mental equipment, that is the experience, gained in making rubber sponges would be available for the manufacture of sponge rubber for gas masks and for a variety of other war uses. As to the mechanical equipment being the same in the manufacture of rubber sponges and sponge rubber, it is not. The former calls for machinery and devices that cannot be used at all for the latter.

THE RUBBER TRADE IN BOSTON.

By Our Regular Correspondent.

BOSTON has been hard hit by the epidemic of influenza and its after-course pneumonia, and there were few manufacturing establishments in any line which were not restricted in their working forces on account of the contagion. Happily, the disease is greatly modified in virulence, and business is going along more nearly as it was before the trouble appeared. However, rubber factories are running far from normal, with those having government contracts much busier than the others. The restriction of crude rubber supplies and the curtailment of production are working a hardship on many manufacturers, some of whom cannot fill the orders on their books, and must refuse new business offered them. In spite of this the rubber trade of New England has done its full share in subscribing for the Fourth Liberty Loan Bonds, as it did for the three previous loans.

* * *

The Boston Rubber Shoe Co. has recently opened Aldine House, a delightful home for girls, convenient to its Melrose factory. The house, which is modern in all its equipment, contains 40 well-furnished rooms, giving comfortable home surroundings at low cost to the young women who are fortunate enough to secure these accommodations. Home cooking, with pure milk and vegetables from the company's own farm, are attractive features of the table. The management is in the hands of P. F. and J. T. Bean, who have had years of experience in work of this kind. This is an excellent example of the manner in which rubber manufacturers seek to make their workers comfortable, that their vocations may be attractive.

* * *

Everlast, Inc., of this city, is doing an immense business in the manufacture of elastic webbing for the production of gas masks for the United States Government. With its present facilities it is turning out each week between 750,000 and 800,000 yards of inch-wide webbing for this special purpose, besides providing other lines of webbing for its regular trade. The corporation has in contemplation the erection of a three-story building in Chelsea, 250 feet long, to accommodate this special work for the Government.

* * *

There was quite a scare at the Melrose factory of the Boston Rubber Shoe Co. one day last month, when several rooms were filled with smoke, and the fire alarm was sounded. No panic ensued, though there was a general rush for exits. Investigation proved that the fire was in the mixing room, which is fireproof. The blaze was extinguished by chemicals, with only a small loss incurred.

* * *

An explosion of gasoline at the plant of the Ryan Ideal Stain and Blacking Co., Lynn, on September 30, completely demolished

the building, causing a loss of about \$20,000 and resulting in the death of the shipper, George Fred Stocker, Jr., the only person in the building at the time, who was buried in the debris when the building collapsed. State Officer Murray who investigated the matter, believes that gasoline which Stocker was using to wash out cement cans, caught fire and caused the explosion.

* * *

J. B. Waddell has been placed in charge of the Boston branch of the Firestone Tire & Rubber Co., Akron, Ohio, succeeding C. C. Goodwyn, resigned.

* * *

The Cambridge Rubber Co has recently completed and is transferring a portion of its machinery to a new brick two-story

building adjacent to its main factory on Main street, Cambridge, and has also purchased a fine four-story brick building immediately in the rear, thus making six substantial buildings at its plant. This concern has shown steady progress since 1914. Though started two years before, it was in that year that Warren MacPherson assumed the presidency of the company. The working force now numbers over 500 persons. George Rockwell, the general manager, has just gone to the Artillery School at Camp Zachary Taylor, and Mr. MacPherson will assume the duties of management during his absence. The company is busy on coated fabrics and slickers for the Government, and is manufacturing a line of heels, soles and other molded goods, under the supervision of Mr. Garber, formerly of the Plymouth Rubber Co., and more recently with the heel and sole department of the Hood Rubber Co.

* * *

The Boston Belting Co. has discontinued its Boston office at 100 Summer street, and located its business office at the factory on Linden Park street, Roxbury, thereby putting the management in closer touch with the work, and in the end it is expected to be of advantage to the customers of the company. W. E. Hardy, who was general sales manager until the acquisition of the majority of the stock some months ago by Willet, Sears & Co., has returned to the concern and has been appointed general manager. Business is being carried on as usual, with a large amount of work on hand, the only drawback being the difficulty in holding a complement of workers owing to the draft and the recent epidemic of influenza.

* * *

The fiscal year just completed in September has been the largest in the history of the Boston Woven Hose and Rubber Co., East Cambridge, the sales totaling well over \$10,000,000 and the plant, now entirely composed of modern reinforced concrete buildings, includes a total of more than 20 acres of floor space. It is recognized as one of the largest and best-equipped plants devoted exclusively to the manufacture of mechanical rubber goods.



ALDINE HOUSE.

THE RUBBER TRADE IN AKRON.

By a Special Correspondent

THE Government expects to move 40 per cent more freight from the Middle West in 1919 than has been carried during the present year. This means that trucks must assist the railroads as never before, and that the coming year will go down in truck tire history as one of the greatest. Rubber and other Ohio industries are already planning an emergency program for short freight haulage over the highways by motor trucks, employing records, insurance, etc., as in the case of railway freight. The State Highways Transport Committee, appointed by Governor Cox, and of which S. V. Norton, truck tire manager of The B. F. Goodrich Rubber Co., Akron, Ohio, is a member, is now making an analysis of the total tonnage hauled, the routes by which it is or might be carried by motor trucks, and the supply of trucks and drivers. Every state may well have similar information in readiness in case of need.

Six nurses formerly in the hospital department of The B. F. Goodrich Co., Akron, are now in service. Their pictures are shown on this page, as follows: top, left to right—Ella Brown, at a base hospital somewhere in France; Clara Bagent, at base hospital, Camp Sheridan, Alabama; Margaret Trew, in Porto Rico with the American Nursing Corps; below, on ends—Ruth and Mary Sterley, sisters, at Camp Sherman, Ohio; below, center, Mabel Carlson, at Camp Meade, Maryland.



GOODRICH NURSES IN SERVICE.

Employees and officials of The B. F. Goodrich Co. reached their quota of \$2,150,000 towards the Fourth Liberty Loan in less than forty-eight hours. This did not include subscriptions from any of the 125 branches maintained by the company or the \$500,000 purchase by officials of the company in New York.

In response to the call of the Government for material from which to manufacture carbon to put in soldiers' gas masks, The B. F. Goodrich Co. has put Captain L. D. Dana of its Gas Defense Division in charge of making collection throughout Summit County of various kinds of fruit-pits and nut-shells. Government trucks are being used and two tons have been collected already. This material is being dried at Red Cross headquarters in Akron. The public is urged to save and dry all such pits and shells to contribute to the work.

Ralph Moore succeeds A. H. Miner in the legal department of The B. F. Goodrich Co., Akron.

Sixteen employees of the Goodrich company have been retired during the last year under the terms of the company's pension plan. One of these had been with the company 38 years and 11 others, periods varying from 15 to 31 years. Out of the sixteen, four were in the same department and three others in another one.

The Firestone Tire & Rubber Co. has posted a card in each department where all the employees have pledged themselves voluntarily to work full time for the duration of the war. It reads as follows: "The employees in this room 100 per cent vol-

untarily pledged themselves to work full time till our country and its allies win the war." Three thousand employees have already signed this pledge and more are signing daily.

The Firestone Tire & Rubber Co. raised more than its quota of subscriptions to the Fourth Liberty Loan in less than a week. One department averaged \$168 for each employee, raising \$8,000.

Lessons in French were started in October at the Firestone Club for the benefit of girls employed by the Firestone Tire & Rubber Company.

H. G. Kitt succeeds F. M. Morris, enlisted, as factory paymaster at the plant of the Firestone company.

The Mason Tire & Rubber Co., Kent, has been awarded a contract by the United States Army to manufacture raincoats. Additional space has been leased for the duration of the war and the company expects to be turning out 1,000 coats daily by January 1, 1919.

The Electric Motor & Repair Co., Akron, maintains a repair department for the purpose of repairing electrical equipment of rubber factories. It also offers the services of its engineering department to its customers.

Every employe on the payroll of The Marathon Tire & Rubber Co., Cuyahoga Falls, subscribed to the Fourth Liberty Loan, thus winning the 100 per cent honor flag.

The Western Reserve Rubber Co., Akron, has increased its capital from \$10,000 to \$50,000.

The Avalon Rubber Manufacturing Co., Akron, has increased its capital stock from \$50,000 to \$200,000.

Akron factories, as well as the city, will continue on Eastern time until November 28, the Council having passed the necessary resolution to make this effective.

THE RUBBER TRADE IN RHODE ISLAND.

By Our Regular Correspondent.

LABOR shortage as a result of war conditions, coupled with the forced temporary abandonment of work by those suffering from the recent outbreak of influenza, materially curtailed the output of the several plants manufacturing rubber goods in Rhode Island. This was particularly discouraging because of the fact that many of the establishments had fallen far behind their schedules in production and delivery on contracts during the six weeks' strike and shut-down previous to the first of September.

Orders in large volume continue to be received, but the officials find it impossible to keep pace with the increasing demands. For some time a growing number of manufacturers, including rubber concerns, have been taking the attitude, that for at least the period of the war, immigration laws should be less stringent in order that a normal supply of labor for manufacturing purposes may be available. Throughout the state the rubber industry continues to be driven to its utmost, and notwithstanding

the great expansions and improvements which the plants have undergone during the last year, they have been utterly unable to maintain the balance of supply and demand.

* * *

Although the "Fighting Fourth Liberty Loan" in this State was not conducted along industrial lines, as was the case in the three preceding campaigns, still the manufacturers of rubber goods and the allied interests made themselves so prominent that they were fully recognized. Rhode Island had an allotment of \$50,000,000, of which \$30,000,000 was accredited to the city of Providence, which was practically twice the sum called for by the Third Liberty Loan. But notwithstanding this great increase, those in charge went systematically to work and succeeded in securing a total of more than \$61,000,000 in the state and nearly \$35,000,000 in Providence.

On the night preceding the conclusion of the campaign a special gathering was held at the Turk's Head Club at which \$7,458,750 was subscribed, the greater part of which was taken by corporations and individuals that had already subscribed liberally. Only the week before a similar meeting was held at the same place at which \$1,250,000 was subscribed. Colonel Samuel P. Colt, president of the United States Rubber Co., who had otherwise taken a large amount of the bonds, was one of six who subscribed \$100,000 each, at the first meeting. He pledged at the second meeting \$1,000,000 in addition to what he had previously taken and then took \$50,000 each for his two sons in the service—Russell G. and Roswell C. Colt.

It was estimated on the 16th of the month that the employees of the National India Rubber Co. would subscribe fully \$1,000,000 to the loan.

The Woonsocket Rubber Co., Woonsocket, doubled its \$75,000 subscription to the Third Liberty Loan and took \$150,000 of the present issue.

At the National India Rubber Co., Bristol, the overseers, foremen and forewomen held a meeting early in the campaign and formulated a plan whereby a thorough canvass was made of the entire plant. The result was that a substantial subscription of bonds was secured, 2,554 employees taking an aggregate of more than \$200,000.

The Bourn Rubber Co. subscribed \$14,000 for its employees, and the Glendale Elastic Fabric Co. announced its subscription for \$75,000, of which \$15,000 was credited to Providence and \$60,000 to Easthampton, Massachusetts.

* * *

A two-day conference of the superintendents of departments in ten of the manufacturing plants connected with the Footwear Division of the United States Rubber Co. opened at the National India Rubber Co.'s plant, at Bristol, on October 16. The factories represented are located in Cambridge, Millville and Malden, Massachusetts; New Haven, Waterbury and Naugatuck, Connecticut; Newark and New Brunswick, New Jersey, and Woonsocket and Bristol, this state. There were also representatives from the New York office, the party numbering 27 visitors from the eleven cities mentioned, and 20 superintendents of departments in the National India Rubber Co. The visiting representatives inspected the footwear and wire departments and had explained to them the various processes of manufacture. The entertainment provided included luncheon at the National company's plant, music by the orchestra, a Rhode Island clam bake at Colt Farm, and addresses by George Schlosser, the vice-president, M. H. Clark, general footwear factory manager, and others.

* * *

Acting under instructions from George Schlosser, general factory manager, the Woonsocket Rubber Co. in Millville and Woonsocket early last month started upon a plan of giving the operatives in all departments fresh air and rest as means of promoting health during the epidemic of influenza which caused

an unusual amount of sickness and several deaths. At 10 o'clock in the forenoon and again at 3 o'clock in the afternoon employees were allowed to go into the mill yards for fresh air and relaxation. A similar plan was also put into execution at the National plant, Bristol.

* * *

Since its resumption of work following the several weeks of enforced shut-down because of labor controversies, the National India Rubber Co. has been pushing its facilities to the utmost at the Bristol plant to recover lost time. Early in October the announcement was made that the company had received a contract from the United States Government for 300,000 pairs of hospital shoes. This company has installed two new and larger steam boilers, a brick chimney to replace two old brick chimneys, while one iron stack is being erected to serve the whole battery of 15 boilers at the plant. It will be the tallest in town, 175 feet high and will have a flue diameter of eight feet.

* * *

Mrs. John Post Reynolds, who has been in charge of a home for aged women in Fall River, Massachusetts, has been secured as matron of the new day nursery of the National India Rubber Co. soon to be opened, and is to be assisted by skilled nurses. The house purchased for the purpose is at the corner of High and Bourn streets, one block from the plant.

* * *

The Narragansett Electric Lighting Co. is installing at the factory three new transformers of 2,500 kilowatts' capacity, to replace a smaller equipment. These changes are necessitated by the enlargement of the factory and the installing of new machinery.

* * *

The Bourn Rubber Co., continuing its policy of expansion, has recently acquired considerable land with buildings thereon, located on Warren, Harrison and Westfield streets, Providence, adjoining the company's plant. As fast as possible these buildings are to be razed and new buildings of a character suitable to the needs of the company erected in their stead.

* * *

The new restaurant at the Woonsocket plant of the Woonsocket Rubber Co., is now in operation and the one at Millville, Massachusetts, will soon be ready. It is expected that some little time will elapse before the one planned at the Bristol plant will be completed.

THE RUBBER TRADE IN TRENTON.

By Our Regular Correspondent.

THE Trenton rubber manufacturers responded nobly to the Fourth Liberty Loan appeal, subscribing more than \$500,000. The subscription list was somewhat larger than that made on the three previous loans. The Thermoid Rubber Co. and the Joseph Stokes Rubber Co., controlled by the same directors, headed the list. Both companies contributed \$132,650, and when it was seen that the subscriptions of other manufacturers were increasing, the two concerns announced near the end of the drive that they would buy an additional \$18,000 worth of the bonds. The Ajax Rubber Co. was second with \$81,000, while the United & Globe Rubber Manufacturing Cos. were third with \$77,350. A. M. Sawyer, of the Vulcanized Rubber Co., Morrisville, purchased \$2,000 worth of bonds, and the Trenton Rubber Trade Association subscribed \$1,000.

The list of subscriptions by rubber factories and individuals interested in the trade totaled \$618,250. The list follows:

Thermoid Rubber Co.	\$150,650
Joseph Stokes Rubber Co.	81,000
Ajax Rubber Co.	77,350
United & Globe Rubber Manufacturing Cos.	77,350
Empire Rubber Co.	61,000
Acme Rubber Manufacturing Co.	55,000
Essex Rubber Co.	37,000
Times Rubber Co.	27,000

Hamilton Rubber Manufacturing Co.	25,000
Continental Tire & Rubber Co.	25,000
Delton Tire & Rubber Co.	18,750
Lucerne Rubber Co.	16,500
Whitehead Bros. Rubber Co.	16,100
Trenton scrap rubber dealers	15,000
Sanhican Rubber Co.	5,300
Mercer Rubber Co.	5,000
Wayne Steel Hose & Rubber Co.	5,000
Simple Rubber Co.	3,800
Zog & Co. Rubber Co.	3,500
Frank Miller	1,000
Alfred Whitehead, Whitehead Bros.	1,000

Influenza and pneumonia seriously hampered the work in the Trenton rubber industry during the last month and greatly delayed important Government work. In one rubber mill alone nearly one-half the working force was laid up and several of the employees succumbed to the disease. Aside from this the rubber concerns are unable to secure enough help. Nearly all the local rubber concerns are engaged on Government work and therefore their employees will not be placed at other work as will be done in some other manufacturing establishments.

John T. Spicer, a traveling salesman in the employ of the Thermoid Rubber Co., remained off the road for the entire three weeks during the Fourth Liberty Loan drive to assist in the Liberty Loan office in the Commonwealth Building as secretary for William J. P. Stokes, chairman of the last Trenton drive.

The Essex Rubber Co. was the only concern of its kind to occupy a space at the Trenton fair. The company leased a big booth and had young women in charge, attired in bloomers, distributing cards bearing the following: "Men and women who wish to devote their energies toward the production of essentials required for the national welfare and equipment for Pershing's army, address Essex Rubber Co."

The Union Auto Tire Co., Atlantic City, New Jersey, has leased the entire Hardiman Building, 141 North Warren street, for the sale of tires. Several improvements will be made.

William J. B. Stokes, president of the Thermoid Rubber Co., who was chairman of the Fourth Liberty Loan, was so well pleased with the campaign in Trenton that he offered a \$50 bond to the Boy Scout Troop selling the most bonds among boys.

John A. Lambert, treasurer and general manager of the Acme Rubber Manufacturing Co., represents the Trenton rubber industry on the Sub-Regional Committee of the Resource and Conversion Division, War Industries Board. General C. Edward Murray, former treasurer of the Empire Rubber & Tire Co., is chairman of the board.

GENERAL RUBBER CO.'S MATURING DEBENTURES PROVIDED FOR.

In order to provide the funds required to pay off the General Rubber Co.'s five per cent debentures due November 1, 1918, the United States Rubber Co., owner of the General Rubber Co., has sold to Kuhn, Loeb & Co., New York City, \$6,000,000, principal amount, of its five year seven per cent secured gold notes and has agreed to provide the balance of cash required to pay the maturing debentures. The new notes will be secured by deposit with Industrial Trust Co., Providence, Rhode Island, as trustee, of \$9,000,000, principal amount, of United States Rubber Co. first and refunding mortgage five per cent gold bonds, will bear interest from December 1, 1918, and mature December 1, 1923, and is redeemable at the option of the rubber company, as a whole but not in part, on any interest payment date on or after December 1, 1920, at a premium of one per cent for each six months between the redemption date and the date of maturity, together with accrued interest.

ARMY AND NAVY AWARDS.

PANAMA CANAL AWARDS.

THE following awards have been made for furnishing supplies for the Panama Canal:

GASKETS, ASBESTOS.—60, \$47.81, Belmont Packing & Rubber Co., Philadelphia, Pennsylvania.

VALVES.—75, \$60, Empire Rubber & Tire Co., Trenton, New Jersey.

NAVAL SUPPLY AWARDS.

The following awards have been made for furnishing supplies for navy yards:

BALLOONS, RED.—\$28,220.—The Miller Rubber Co., Akron, Ohio.

BUTTONS, HARD RUBBER.—4,750,000 dozen, \$243,200 (part), American Hard Rubber Co., New York City.

COMBS.—\$78,300, American Hard Rubber Co., Trenton, New Jersey.

FERRULES.—\$17.50, Western Rubber Co., Goshen, Indiana.

GROMMETS.—\$55.25, La Favorite Rubber Mfg. Co., Hawthorne, New Jersey.

HOSE, ENGINEER AND WASH DECK.—\$1,560, Boston Belting Co., Boston, Massachusetts.

HOSE, GARDEN.—\$187.50, Acme Rubber Manufacturing Co., Trenton, New Jersey.

HOSE, WATER.—\$165, Manhattan Rubber Mfg. Co., Passaic, New Jersey.

PACKING RINGS.—\$275.04, The B. F. Goodrich Co., Akron, Ohio.

PACKING, SHEET.—\$4,700, Manhattan Rubber Manufacturing Co., Passaic, New Jersey.

TAPE, INSULATING.—\$36,312.50, The Okonite Co., New York City.

TUBING, GUM.—\$147, New Jersey Car Spring & Rubber Co., Inc., Jersey City, New Jersey.

AWARDS FOR QUARTERMASTER'S SUPPLIES.

The following awards have been made by the office of the Quartermaster General:

ARMY NURSE'S RAINCOATS.—\$30,240, United States Rubber Co., Boston, Massachusetts.

RAINCOATS.—\$279,000, United States Rubber Co., Boston, Massachusetts; \$33,480, H. B. Gordon & Co. (Inc.), Boston, Massachusetts; \$55,800, Adolph Deutsch & Co. (Inc.), New York City; \$167,400, C. & E. Raincoat Co., Boston, Massachusetts; \$225,200, Chicago Rubber Clothing Co., Racine, Wisconsin; \$111,600, Apsley Rubber Co., Hudson, Massachusetts; \$200,880, Cambridge Rubber Co., Cambridge, Massachusetts.

ARMY SIGNAL SERVICE AWARDS.

The following award has been made for furnishing supplies for the Army Signal Service:

WIRE, TWISTED, PAIR.—7,500 miles, at \$113.50 per mile. The B. F. Goodrich Co., Akron, Ohio.

GENERAL ENGINEER DEPOT AWARDS

The following awards of rubber goods have been announced at the General Engineer Depot, United States Army:

HOSE, SUCTION, Two-Inch.—40,020 feet, \$5,547.60, Hewitt Rubber Co., Buffalo, New York.

HOSE, SUCTION, WITH FITTINGS.—45,000 feet, \$67,050, The B. F. Goodrich Co., Washington, D. C.; 5,960 feet, \$23,764.44, Boston Woven Hose & Rubber Co., Boston, Massachusetts; 45,000 feet, \$64,350, and 7,500 feet, \$10,725, The Goodyear Tire & Rubber Co., Washington, D. C.

HOSE, WATER, WITH FITTINGS.—46,960 feet, \$68,984, The Republic Rubber Co., Washington, D. C.

The Rubber Trade in Great Britain.

By Our Regular Correspondent.

RAW RUBBER.

THOSE firms who are the buyers of Hard and Soft Fine Pará are getting somewhat nervous about their supplies. It is stated that the stock in England is practically nil, and though this is probably an exaggeration, it is certain that the amount on hand is small. Purchases at the present time at the price of 3s. 2d. a pound for Hard Fine are all on the basis of delivery ex first available steamer from Pará. In these days of reduced and to some extent incompetent staffs, mistakes are of more frequent occurrence than was formerly the case and in this connection it would be interesting to hear how many orders were received by the London rubber brokers, whose list quoted Hard Fine Pará at 2s. 3d. when it obviously should have been 3s. 2d. Of late years, owing to rapidity of transport, the washing loss of Fine Pará has shown a rise of two to three per cent, owing to the retention of more moisture, and now that transit has again become slower, buyers are speculating whether they will get back to 15 per cent losses again.

The number of patents recently taken out by the General Rubber Co. of New York in connection with the treatment of raw rubber and latex, and made particularly with the idea of improving the plantation product, show the zeal with which the American rubber chemists are cultivating a new field of research—a field which has hitherto been largely monopolized by the British and Dutch. The subject matter of the patents is too extensive to be profitably referred to in a few lines, and I shall only make the remark that whereas in these patents importance appears to be attached to the retention in the rubber of nitrogenous bodies and carbohydrates, one is always reading in contemporary rubber literature of processes for purifying low-grade rubber by the removal of all bodies which are found in conjunction with the rubber hydrocarbon. If we take it as proved that the small amount of resin in high-class rubber is a good thing and the large amount in low-class rubber a bad thing, it is clear that desination must not be carried too far. It was probably the overlooking of this point which caused the trouble which manufacturers experienced some years ago when desinated low-grade rubber was more prominent in the market than is the case to-day.

Probably only very few rubber manufacturers rewash their plantation rubber before use, but I know of some who do this so as to be absolutely certain that no foreign matter enters into their goods. Of course, a quality such as barksy crêpe has to be washed, but I have in my mind firms who religiously rewash first-quality pale-brown crêpe.

PROSPECTIVE COAL SHORTAGE.

The troubles of the trade in the past, prominent among which has been labor, seem likely to be added to by the shortage of coal. At the time of writing, the effect of this shortage has not actually been felt, but the apprehensiveness is such that quotations for price and deliveries of rubber goods are being made with a clause having reference to probable developments which the manufacturers cannot control. With regard to increase in the price of rubber goods, what has recently occurred with balata belting, now double the price of five years ago, this is bound to occur with all goods in which cotton fabric predominates, as the stock of cloth made from cheap cotton gets exhausted.

Meanwhile, despite all attendant worries, the manufacturers generally show satisfactory balance sheets. One of the latest is the Leyland & Birmingham Rubber Co., Limited, which has

a profit of £77,750 (\$376,310), against £63,896 (\$309,256) a year ago. The dividend is 15 per cent for the third year in succession. Moreover, £10,000 (\$48,400) is carried to reserve against nil in the previous year. The issued ordinary share capital of the company is £268,257 (\$1,298,363), while the preferred capital issue is £50,000 (\$242,000).

MANUFACTURE OF RUBBER IN NORWAY.

The paragraph in the July issue of THE INDIA RUBBER WORLD referring to the prospective enlargement of the rubber factory at Mjøndalen reminded me of a tour in Scandinavia in 1905. During my stay in Christiania, on coming from higher latitudes, I took the opportunity of visiting these works. After a journey of about thirty miles in the customary narrow-gauge train drawn by two diminutive but energetic Baldwin locomotives, I arrived at the seaport of Drammen on the Christiania Fjord and managed to find my way to Mjøndalen and its factory. The correct title of the latter is Aktieselskabet den Norske Galøge & Gummivare Fabrik, Mjøndalen-Drammen. The superintendent of the works is or was at that time, G. M. Harrel, who had learned his business in America. The capital of the company was 400,000 kroner (\$108,000). Though some rubber boots were made, the main output was galoshes and soles for tennis shoes. Norway has always obtained much of her rubber footwear from Sweden, where there is a large factory at Helsingborg, and from Germany, though I gather that she is now to satisfy her requirements by the enlargement of the Mjøndalen factory. The Helsingborg works, which must feel the new competition, had a capital of 1,500,000 kroner (\$405,000), employed 600 workpeople and turned out 5,000 pair of galoshes a day. By way of completeness I give the correct title of this works—Helsingborg Gummifabrik Actiebolaget, the last half of this alarming word corresponding to the American "Inc."

SYNTHETIC RUBBER.

It is hardly surprising that what progress has been made with the synthetic rubber problem has to be reported from Germany rather than from other countries in a better position to obtain the natural product. The new factory at Leverkusen is said to be capable of producing 2,000 tons yearly, though as far as I am aware, the cost has not been made public. It is not surprising to hear that the product is more suitable for hard rubber than for soft rubber goods, as the range of materials, by no means all of the rubber class from which satisfactory hard rubber goods can be made, is now quite extensive. No progress in this direction is to be reported from the British company which was floated with a flourish of trumpets in 1912. I might, however, remind those who are apt to be severe on the company, that the Synthetic Products Co., Limited, capital £500,000 (\$2,420,000), was formed, as stated in the prospectus, for manufacturing acetone and fusel oil and for making further experiments in developing synthetic rubber. At present the latter object has been apparently abandoned in favor of the former.

"CRUDE RUBBER AND COMPOUNDING INGREDIENTS."

I see that a new edition of this now well-known work by the Editor of THE INDIA RUBBER WORLD has been issued. Even if in these days when we are exhorted to save our spare cash, there may be some who, already possessing the last edition, do not buy the new one, I feel sure there must be many among the newcomers into the rubber manufacturing field who will send in their orders. That they will obtain up-to-date information, I

feel sure, and no doubt they will also be able to read, as in the earlier edition, of a variety of processes that have been tried but never achieved any useful purpose. In an industry like ours where new ideas are always being put forward, it is decidedly useful to be able to point to the fact that the vaunted novelty of today is identical with a proved failure of the past. The other day I came in contact with a certain chemical used in a more or less recent process in a rubber works and looked into a number of books to find out something about it. Rather to my surprise it was not mentioned. I then thought of the book under notice, and there I found the exact information I wanted. *A fortiori*, those who have no series of chemical works at hand cannot fail to find the book a valuable consultative medium.

RUBBER CARD CLOTH.

Makers report trade as being very good, but that owing to shortage of labor and other current difficulties, it is by no means easy to fill orders promptly. With regard to this business I remember that at the first London rubber exhibition it was stated that the card cloth manufacturers were yielding the point of using plantation rubber, and that it had been tried with success for block rubber. Although unvulcanized rubber-faced cards are expected to last as long as fourteen years, enough time has now elapsed to test the wisdom of the change from Brazilian Soft Fine and it would be interesting to have the results published. This, however, is where difficulties always seem to arise in our trade experiments and I am not hopeful of seeing anything authoritative in print. All I can say myself with certainty on the matter is, that some firms have not yet deviated from their procedure of forty years ago. With regard to the vulcanized rubber cards made by certain firms for use in woolen mills, as these have a much shorter life, I do not see why there need be the same anxiety in making a change. A considerable export trade to all cotton-spinning countries has always been a feature of the English manufacture, but this has been much interfered with by the war, and many orders in hand are remaining unfilled. This is especially the case with Russia, where a branch works was once started by a prominent English company, but was stopped after a few years. In some German works making card cloth, the fabric and steel points were brought from England and made into the completed rubber-faced card in Germany. In the early days of rubber reclaiming, the highest quality which was on the English market was known as Rowley's Amazon rubber, which consisted of the strippings of old unvulcanized card cloths. The name will not be familiar to the younger generation, though no doubt the material comes forward under some other designation.

CONTROL OF SULPHUR.

The article by Campbell Mac Culloch on the sulphur situation in America in the August issue of THE INDIA RUBBER WORLD is of great interest and deals with an important matter in a much fuller way than would be possible in our technical press under existing circumstances. After all, America has been a sulphur producer for only about ten years, and supposing the working of the deep Louisiana deposits by the Frasch process had not come about, she must have been in a very awkward position if she was still dependent upon Sicily for her supplies. It is difficult for some people to believe that a country of the size and presumed general resources of the United States can be short of mineral products, but there are many minerals in which she is greatly deficient. It appears that the pyrites deposits in America have never been worked to any extent and that any new mines cannot be brought into operation quickly enough to be of service to replace the now diminished imports of foreign pyrites. In these circumstances it certainly seems a good move to adopt the thio-gen process of recovering sulphur from waste smelter gases, though the estimated cost of \$10 to \$13 a ton will

probably be exceeded in practice. The smelter fume problem is of much greater importance in America than in any other country, and whether the recovery of the sulphur proves a commercial success or not, it may be made compulsory. In pre-war days the smelter gases were not converted into vitriol because it would have been impossible to market the prospective amount of vitriol. In other countries smelter gases are made to provide the vitriol for the adjacent manufacture of superphosphate. If the proposed government control of sulphur in America works as smoothly as the similar control here, rubber manufacturers will not have much to complain of. With characteristic optimism, our Editor discourses of the possibility of doing without sulphur in the trade, but as the bulk of the urgent work is for government purposes I think we may take it that any government specification will continue to cite sulphur and will not countenance the various alternative methods of producing an apparently vulcanized article. One trembles to think of the new female labor being put on to vulcanize rubber with nitric peroxide or chlorine.

BRITISH SCIENTIFIC PRODUCTS EXHIBITION.

THE recent British Scientific Products Exhibition held in London, says the "India Rubber Journal," had interesting exhibits in connection with aircraft, gas traction and electrical manufactures. A gasoline-resisting rubber hose that does not swell when in contact with gasoline was shown in use as connections between lengths of metallic airplane gasoline tubing. A shock-absorber cord used on the outer carriages of airplanes was also exhibited. The three standard sizes now in use on British machines are as follows:

	(1)	(2)	(3)
Diameter.....	3/4 inch	1 1/2 inch	3/4 inch
Load at double extension.....	226 lbs.	140 lbs.	80 lbs.
Number of double strands.....	266	172	95

Rubber strands in two distinct coverings of cotton braiding form the cord. Before braiding, the rubber thread can stretch 500 per cent, but to enable it to carry heavy loads it is stretched to two or three times its length and held at that tension by the braiding. The British cord carries a load of 140 pounds at double extension, while the German cord carries 40 pounds.

Balloon fabrics were also shown. The fabric for the outer envelope of British observation balloons has two layers of cotton fabric, folded diagonally in two plies, the outer one dyed green. Between the plies is a layer of rubber, the free surface of the inner ply also being rubber coated. The fabric is of Sea Island or Egyptian cotton, 2.4 ounces per square yard, 118 threads per inch in both warp and weft, and the strength is 54 pounds per square inch. The rubber coating is 3.4 ounces per square yard with a coating equal to .9 of an ounce per square yard on the inside of inner ply. Total weight of the finished fabric is 9 ounces per square yard. Underneath one end of an observation balloon is an open pocket or rudder which is composed of a single-ply fabric of similar weight, strength and color to the one above described, but the inside rubber proofing weighs 1.8 ounces per square yard while the protective coating outside weighs only .6 of an ounce per square yard. The total weight of this finished fabric is 4.8 ounces to the square yard. The material of the balloonnet is like that of the envelope fabric, but lighter. The rubber proofing is the same. Weight of fabric (untreated with rubber) 1.8 ounces per square yard, 108 threads per inch (warp and weft), strength 34 pounds per inch. Total weight of complete fabric 8.1 ounces per square yard. The nurse balloon is of stouter material, having three plies of cotton fabric folded so that the warp and weft threads are parallel, the outer layer of fabric being stouter than the other two and dyed green. There are layers of rubber between the plies and on the outer surface. The total weight of rubber used is 6.6 ounces per square yard, and the complete fabric weighs 16.8 ounces per square yard.

Molded electrical insulation was on exhibit, the Hightensite Co., Limited, of London, displaying Hightensite, which has a dielectric strength withstanding a pressure of more than 20,000 volts per millimeter of thickness, is non-hygroscopic, non-inflammable, and has a wearing surface equal to brass, not carbonizing under sparking.

Another insulation was shown by Messrs. Fleming, Birkby and Goodall, of Liversedge, Yorks. It is heat and acid-proof, not brittle, and has mechanical strength, chemical inertness, and accuracy of molding. Certain grades stand heat up to 2,000 degrees F. The dielectric strength is 550 to 600 volts per millimeter. One grade is similar to amber without being brittle.

The Darnard Lacquer Company, Limited, showed many forms of a material they call Formite, a soluble, fusible, amber-colored resin, soluble in alcohol, ether, acetone, fusel oil, etc., with a melting point of about 150 degrees F., which, when heated to 250 degrees F., changes polymerically into a hard, homogeneous, amber-like product, no longer soluble or fusible at any temperature, with high insulation and good tensile strength. The makers recommend Formite for heat and electrical insulation and also as a substitute for amber and ebony.

The Improved Solidite Co., Limited, of London, displayed Erinoid, a substitute for the German Galalith.

The British Rubber Manufacturers, Limited, Acton, London, displayed their flexible gas container, having on each of its four sides a deep flap, the lower end of which is secured to the tray by an outside fillet. They also showed Egyptian cotton in its raw state, their material treated with five coats of rubber, the finished material with an inner surface of 12 coats of Para rubber, and with the outside separately coated.

MISCELLANEOUS FOREIGN NOTES.

INCREASED PRICES ON SULPHUR IN BRITAIN.

THE British Ministry of Munitions announces the following revised scale of prices:

	Per Ton.
Flowers of sulphur.....	45 0 0
Roll brimstone.....	39 0 0
Thurds.....	17 13 0

Export is still prohibited. Sulphur will be supplied only in lots of not less than five tons for use in approved trades and industries. A discount of 2½ per cent will be allowed to sulphur merchants and dealers known as such before the war. "Recovered" sulphur can still be procured in the ordinary way from the home producers. All applications to the sulphur committee are to be accompanied by remittance of the price in full.

MECHANICAL RUBBER GOODS FACTORY IN NORWAY.

The Norwegian rubber factory at Mjøndalen, Norway, known as the Aktieselskabet Norske Galogé & Gummivarefabrik, it has been ascertained since the publication of the note about this concern in our issue of July 1, 1918, has been forced by war conditions and the scarcity of rubber to limit its production to articles which are absolutely necessary. It is now chiefly interesting itself in experiments with rubber articles of every kind, with a view to taking up the fabrication of mechanical rubber goods as a regular line as soon as suitable materials are available.

PROPOSED CHANGES IN BRITISH PATENT AND TRADE-MARK LEGISLATION.

Practically all of the belligerent countries have taken steps toward mapping out plans and establishing administrative machinery to deal with the economic situation after the war. Great Britain has probably made more progress than any other nation. Among the numerous means being considered to meet altered business conditions, the Board of Trade has introduced two measures providing for far-reaching changes in the trade-mark

and patent legislation, which are intended to eliminate some of the abuses on the part of foreign, particularly German, concerns under the existing law. The changes in the patent law include stricter application of the working clause, greater facilities for licensing, and a revocation of the patent for any abuse of patent rights, such as failure to work the patent, or to grant licenses on reasonable terms, whenever the public interest demands, or unfair conditions imposed on the use or sale of the patented article.

RUBBER IMPORTS IN AUSTRALIA AND NEW ZEALAND.

The increase in rubber goods imported from the United States into Australia from 1913 to 1917 is notable. The figures are furnished by the statistician of the Australian Government, who selects 1913 for the comparison because that year was the last in which returns were reckoned from January through December, the change to the fiscal system having been made in 1914-1915, and because that year can be taken as the latest normal pre-war year. The value of the imports in 1913 was \$623,928, and in 1916-17, \$2,031,822.

The comparison of Victorian imports for the first six months of 1918 and for the corresponding period of 1917 is interesting. For 1918 they were \$1,398,125, and for 1917, \$799,770.

The value of New Zealand's imports of rubber tires for automobiles from the United States rose from \$133,163 in 1914 to \$1,163,726 in 1917.

RUBBER AND RUBBER PRODUCTS FOR DENMARK.

A commercial and shipping agreement, similar to that between the United States and two other Scandinavian nations, has been concluded with Denmark. Foodstuffs, raw materials, manufactured goods and other essential commodities aggregating 352,895 metric tons annually are to be exported. Rubber and rubber products appear in the list as follows: crude rubber, 130 tons; bicycle tires, 100 tons; rubber footwear, 100 tons; machine packing, 100 tons; motor and motorcycle covers and tubes, 250 tons; other rubber manufactures, 100 tons.

SWISS TRADE-MARK OF ORIGIN.

To prepare against attempts made to pass off German goods as of Swiss origin, a national Swiss trade-mark has been instituted and a syndicate for Swiss exportation (Syndicat pour l'Exportation Swiss) has been formed. The syndicate, known as the S. P. E. S., consists of a body of 15 men, and will have its head offices at Geneva. As owner of the mark "S. P. E. S.," indicating Swiss origin, it will give its members the right to use this mark for goods produced on Swiss soil or by Swiss industry, and for goods which have undergone in Switzerland such treatment as to give them a new character. Only native-born Swiss citizens and those who have been naturalized for at least 10 years are eligible for membership.

ARTIFICIAL RUBBER IN GERMANY.

The Dye Factories Company (formerly Friedrich Bayer & Co.), of Leverkusen, is contemplating the building of large extensions in Leverkusen, for which it has already placed the contracts. One of the building contractors has already invited tenders for 30 million bricks. It is reported that artificial rubber and gum will be produced therein. The company is already extensively engaged in the production of these commodities. ("Vossische Zeitung.")

DOMINICAN REPUBLIC RUBBER GOODS IMPORTS.

During 1917 the Dominican Republic imported 84,266 kilos of rubber goods, of which 76,479 kilos came from the United States, 6,949 kilos from Porto Rico, and the rest from Cuba, the United Kingdom, France, Spain, and Japan.

Rubber Planting Notes.

DUTCH EAST INDIAN RUBBER EXPORTS.

A PHENOMENAL increase in the Javanese rubber exports to the United States for 1917 over those for 1916 is reported by United States Consul H. J. Dickinson at Batavia, Java, the reasons being the interruption of steamer service to Europe and the prohibitive freight rates to European markets. The result is that the American importer and the Dutch East Indian exporter have established direct relations of mutual benefit.

Mr. Dickinson thinks it doubtful whether Holland will ever regain the strong position she formerly held as distributor of her colonial produce to American consumers.

From Batavia the rubber exports to the United States were 33,450,281 pounds, value \$18,063,325, for 1916, and they rose to 54,352,904 pounds, value \$30,937,317, for 1917; from the same port jelutong exports rose from 777,148 pounds, value \$29,619, for 1916, to 1,757,651 pounds, value \$151,220, for 1917.

From Soerabaya the rubber exports to the United States were only 7,224,262 pounds, value \$3,886,835, for 1916, and they advanced to 14,001,766 pounds, value \$8,710,336, for 1917; from the same port jelutong exports increased from 2,312,003 pounds, value \$70,757, for 1916, to 6,712,178 pounds, value \$310,665, for 1917. Soerabaya also sent us 574,644 pounds of gutta percha, valued at \$35,158, in 1916, but this port forwarded to us 1,585,614 pounds, value \$112,359, in 1917.

A NEW TAPPING METHOD.

W. van Brakel describes a new method of tapping, successfully employed by him on the Basilam Estate, Bindjei, East Coast of Sumatra. The usual system followed in this district is two cuts over a quarter, from left to right above each other. Mr. van Brakel considered that in this way the flow of latex to the upper cut was somewhat held back by the lower cut, and to prove this, the direction of the cuts was changed. The upper was placed to the left of the lower so that the latex flowed into the cup via the lower cut. Experiments carried out during three and a half months on two plots of 2,700 trees each showed an increased yield of about 12 per cent under the new system, while it was further found that the coolies could tap the same number of trees. In the rainy season, this method causes greater loss of latex, but even so it is said to be more profitable than the old one.

CUBING RUBBER PRIOR TO BALING.

A correspondent suggests in "The Malaysian Tin and Rubber Journal" that rubber planters should make their smoked sheet into five-foot cubes, which would be easy to do when the sheet comes out of the smoking-room, as only few estates would have more than a few to make daily. No ribbing would be required and the name and brand of the estate could be pressed into the cube to a depth of say half an inch. More rubber could be put into a bale this way than when a dealer at a port presses sheets into a baler as he does now. Only the outside of the cube could possibly mold, the mass would be an obstacle to pilfering, and if the outside covering were torn off the "chop" of the estate would still be there.

THE CEYLON RUBBER INDUSTRY.

The Annual Report on the Blue Book for 1917 states that the area under *Hevea* rubber in Ceylon is now about 251,500 acres. Rubber is gradually displacing cinnamon in the western province in the Matara district, large areas formerly under citronella are now being planted with rubber, while in the Kalutara district even rice lands are being converted into rubber estates. The report regrets the diminished production of foodstuffs, says that the rubber is sometimes badly planted, easily becoming diseased,

when it becomes a danger, and states that increased idleness and crime follow the change from rice to rubber growing, as it is far less troublesome to grow rubber than to grow "paddy." Rubber is being interplanted with tea in the low country with a view to replacing tea by rubber.

A notable increase, amounting to 15,910,700 pounds, is reported in the rubber exports of 1917 over 1916. Exports since 1912 have been as follows:

1912	.....pounds	13,259,906	1915	.....pounds	43,574,800
1913	.....pounds	22,649,160	1916	.....pounds	48,669,000
1914	.....pounds	30,672,400	1917	.....pounds	64,579,700

In 1917, the United States were supplied with as much rubber as the United Kingdom. Other countries supplied (in order of importance) were: France, Italy, Russia in Asia, Japan, South America, China. All exports are under license owing to the war.

BALING PLANTATION RUBBER A SUCCESS.

UNDER the stimulation of a request by The Rubber Association of America that rubber prepared in the Far East for shipment to this country be packed in such a manner as to save cargo space to the fullest possible extent, the rubber shippers in that district are rapidly adopting the methods of baling rubber which had their origin in 1915 on the plantations of the United States Rubber Co., in Sumatra. These methods of baling mark the successful conclusion of a long series of experiments to perfect a method of preparing the rubber for transport which would provide a compact, strong package to withstand the long voyage to America, and allow the crude rubber to arrive at its destination in first-class condition, as well as reducing the original cost of the containers to the lowest possible figure.

Previously, plantation rubber was as a rule shipped from the Far East in wooden cases. These were for the most part "momi" cases—wooden boxes of white wood made in Japan for the tea trade—and rough redwood cases. Their use was unsatisfactory because they were frequently broken due to a shrinkage of the wood which was often green lumber, so that dirt and splinters found their way into the rubber. An effort to strengthen the boxes by using wire and iron straps had little effect in preventing breakage during the voyage. Another difficulty connected with the use of the boxes was that it was deemed inadvisable to weigh them to their full capacity because of their lack of strength.

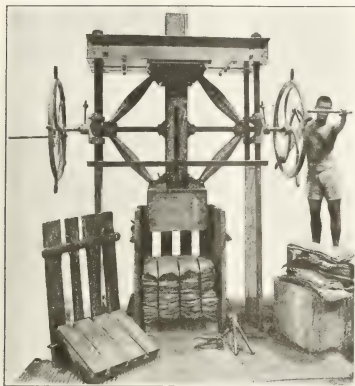
When the late E. H. Pound went to the United States Rubber Co.'s plantations in 1914 as director of the technical department, he took out with him various kinds and sizes of bags, sacks and drills, with which he made an effort to determine the best form of package. Rubber packed in these containers arrived in New York in good condition, showing that it was not necessary to use wood as a covering. Experiments were also made with fiber coverings, but the excessive moisture caused these to deteriorate rapidly, even when well-varnished.

In February, 1915, the company began to ship rubber in gunny sacks lined with cheap cotton cloth procured from India and treated to protect against mold and decay. At this time a number of old tobacco presses found on that part of the plantations formerly used for growing tobacco, were tried out for baling rubber. When pressed, the bales were secured with strap iron which was fastened with an ordinary cotton bale fastener. These presses were of the hand variety but recently power has been applied to the presses, the number of which has been augmented by the latest and most improved type of American presses.

All rubber shipped by the United States Rubber Co. from its plantations since December, 1915, has been forwarded in bales

of this character, and the methods have been used on a large scale at the company's warehouses in Singapore since March of this year. The amount of shipping space saved by the adop-

tion of this character, and the methods have been used on a large scale at the company's warehouses in Singapore since March of this year. The amount of shipping space saved by the adop-



RUBBER BALING PRESS AS FORMERLY OPERATED BY HAND

tion of this method is readily perceived from the statement that a package of five cubic feet now contains 180 pounds of pale crepe as against 120 pounds under the old method, and a package of smoked sheets of similar dimensions contains 230 to 240 pounds as against 180 pounds under the old method of packing.

THE SITUATION IN MALAYA.

By Our Regular Correspondent.

A NEW ROOT DISEASE.

WHAT with import restrictions, scarcity of ship tonnage and a continual battle with tree diseases, the rubber planter in the East is having a thorny time. To add to his troubles, a new root disease has recently been discovered by G. N. Magill, of Changkat Serdang Estate, Taiping. It will be remembered that it was Mr. Magill who also called the attention of rubber planters to the danger of brown bast.

This new disease appears to be the ordinary *Hevea* canker on the roots, which on exposure show wounds where the bark has died away, while the sapwood is discolored. The development of the disease seems to be rapid, but detection in the early stages is practically impossible unless every tree is opened up for inspection and kept so, as the canker is not noticeable until the foliage begins to wither. When the collar and roots are exposed, sores are found.

The crown does not begin to wither until the disease has reached a far-advanced stage, when there appears to be little hope of recovery. Mr. Magill says:

The actual area of the canker wound may not be very large, but bark running out along the laterals and down the tap root becomes dead and, when gently broken, shows plainly minute dried strands of rubber, which resemble that seen in stem canker, though the coloring of the diseased bark is different.

There can be at present only one treatment—excise all diseased tissue and sapwood infected, but in bad cases this almost means depriving the tree of all its support, whilst in cases where the tap root and laterals are infected there is nothing left but to destroy the tree.

Paint exposed wood with solignum and when dry put on a cover of tar. Have the area limed and dug over. When a case is finished spray Bordeaux mixture lavishly around and cut a

SCHOOL FOR "TREE-DRESSERS."

Now that diseases are forcing themselves so persistently on the attention of all concerned, the question of a trained understaff, or "tree-dressers" has been revived. "The Malayan Tin and Rubber Journal" suggests that the local government should seek the aid of the Agricultural School of Peradeniya, Ceylon, to undertake a short special course for a selected number of Malayan tree-dressers. A local scheme for a similar institution could then be developed gradually and meanwhile there would be a staff of tree-dressers already at work by the time their number would be reinforced by others trained in Malaya.

A correspondent of the above journal advocates a school for tree-dressers as the best memorial which planters could establish to the memory of Malcolm Cumming, a former chairman of the Malaya Planters' Association.

PLANTERS AND MAN-POWER.

The urgent need of every able-bodied man in Europe led R. C. M. Kindersley to declare at a recent meeting of the Malaya Planters' Association that the time had come when plantations ought to send many more men for military service, even to the detriment of the estates.

So far, Malayan plantations have scarcely been inconvenienced. It happens that at present there is overproduction of rubber, so that restriction of output and consequent decrease of the working force is needed. But even if this were not the case, Mr. Kindersley questions whether there is any justification for holding back Class A men because it is desired to maintain estates at their present high standard. In his opinion, half the planters could leave the country without affecting the production of rubber. He suggests that neighboring estates could arrange for joint management. Furthermore, in view of the fact that conscription will soon be introduced, it seemed to him to be highly desirable that men willing to volunteer should not be held back until they are sent for.

THE PRESENT SITUATION.

The difficult situation in which the rubber industry has been placed by the import regulations of the British and American Government is naturally causing no small amount of concern and discussion. That something must be done and done speedily is felt by every one and certain more or less vague plans have been mentioned. It has been urged that the Government should control rubber as it is controlling Egyptian cotton and Australian wool. While the rubber problem is admitted to be more complex, it is felt that the Government should nevertheless consider the matter seriously and take some kind of immediate action.

Again, it has been proposed that the Malayan Government should appoint a special commission, composed of officials, planters, rubber merchants, and rubber estate accountants, with definite instructions to sit daily until a practicable scheme to meet the present and future needs has been formulated, a scheme that could be accepted without reservation by all the rubber interests in the peninsula.

Others point out that in various countries, allied and enemy, the need for cooperation in different industries has been recognized and that there is a growing tendency toward combination. If a combination of rubber growers were formed, guided by intelligence and foresight, the future of the rubber industry might be more than secured. Meanwhile, however, there is much hazy talk and, as is known, production is increasing and prices are falling.

SOUTH INDIA RUBBER EXPORTS.

Exports of plantation rubber from South India during 1917 were 8,526,748 pounds as compared with 6,009,946 pounds in the preceding year.

Recent Patents Relating to Rubber.

THE UNITED STATES.

ISSUED AUGUST 20, 1918.

- N**O. 1,276,148. Airship with gas-bags. J. D. Salts, Bois d'Arc, Mo.
 1,276,148. Cushion tire. J. S. Williams, Riverton, N. J.
 1,276,149. Cushion tire. J. S. Williams, Riverton, N. J.
 1,276,179. Resistor strip for tire rim-cuts and blowouts. M. Capps, Reidsville, Ga.
 1,276,184. Treatments, etc. N. J. Dayso, Poughkeepsie, assignor to De Laval Separator Co., New York City—both in New York.
 1,276,231. Antislip device for rubber crutch-tips. T. J. Le Creas, Toronto, Ont., Canada.
 1,276,283. Windshield cleaner. H. D. Thomas, Seattle, Wash.
 1,276,301. Pneumatic vehicle spring. H. P. Arndt, Amston, Conn., assignor of two-thirds to C. M. Ams, New York City. (Original application divided.)
 1,276,325. Valve for pads, etc. R. S. Carling, Los Angeles, Calif.
 1,276,410. Abdominal supporter. D. C. Pratt, Summit, N. J.
 1,276,435. Soft-tire alarm. G. L. Stevens, Long Beach, Calif.
 1,276,485. Demountable rim. W. W. Brown, Burlington, N. C.
 1,276,497. Druggist's rubber cover. Spous City, La., assignor of one-half to W. H. Kirckman, Wahoo, Neb.
 1,276,511. Eraser guard. L. W. Faber, New York City, assignor to Eberhard Faber Pencil Co., Brooklyn—both in New York.
 1,276,526. Rubbing machine with rubber pads. C. B. Hardy and K. E. Gibson—both of Los Angeles, Calif.
 1,276,529. Rubber-ripped rife. J. Horn, Ray, Ariz.
 1,276,533. Tire. S. Hummel, Fort Yates, N. D.
 1,276,597. Tire rim. J. H. Wagnor, Akron, O., assignor to The B. F. Goodrich Co., New York City.
 1,276,628. Cushion wheel. A. S. Duffies, Markesan, Wis., and F. Mead, Chicago, Ill.
 1,276,631. Shirt with elastic thigh-bands. R. J. Fields, assignor of one-half to C. C. Fields—both of Baltimore, Md.
 1,276,666. Ladder foot with anti-slipping tread. A. P. Lohmann, Akron, O., assignor to The B. F. Goodrich Co., New York City.

ISSUED AUGUST 27, 1918.

- 1,276,752. Covered hose. H. W. Goodall, Aldan, Pa.
 1,276,875. Pneumatic tire. F. Colby, Tuxedo Park, N. Y.
 1,276,917. Tire rim. E. W. Hofstater, Nyack, N. Y.
 1,276,985. Bicycle handle rim. F. and N. M. Spranz—both of Detroit, Mich.
 1,277,006. Wearing apparel with elastic gathering means. J. P. Weis, assignor to Metropolitan Sewing Machine Corp.—both of Nyack, N. Y. (Original application divided.)
 1,277,020. Dental disk and holder. L. A. Young, St. Louis, Mo.
 1,277,021. Overshoe retainer. P. J. Young, Santa Susana, Calif.
 1,277,024. Demountable rim. W. W. Allen, Washington, D. C.
 1,277,027. Dating stamp with rubber cushion. W. F. Bartholomew, Brooklyn, N. Y.
 1,277,064. Fountain pen with several compartments and points for each. L. L. Gugel, Louisville, Ky.
 1,277,090. Collapsible tire-rim. E. C. Ludwick, assignor of one-third each to C. E. Harris and F. A. Wise—all of Basin, Wyo.
 1,277,141. Hairbrush with removable rubber cushion for bristles. W. T. Sherman, Troy, assignor by mesne assignments to H. L. Hughes Co., Inc., New York City—both in New York.
 1,277,142. Hairbrush with removable rubber cushion for bristles. W. T. Sherman, Troy, assignor by mesne assignments to H. L. Hughes Co., Inc., New York City—both in New York.
 1,277,277. Gas-bag for dirigible airplane. J. T. Walden, Merryville, La.
 1,277,330. Resilient wheel. F. J. McNulty, Lowell, Ariz.
 1,277,331. Resilient wheel. F. J. McNulty, Lowell, Ariz. (Original application divided.)

ISSUED SEPTEMBER 3, 1918.

- 1,277,396. Cushion tire. J. Dineen, Chicago, Ill.
 1,277,438. Armored rubber tire. H. J. Lomer, Detroit, Mich.
 1,277,516. Tire. C. E. Williams, Akron, O.
 1,277,613. Fountain and stylographic pen. W. Lively, Wallasey, Eng.
 1,277,701. Sling-shot. A. R. De Pass, Columbia, S. C.
 1,277,789. Cushion tire. C. L. Van Ness, Akron, O., and F. A. Krusemark, Roanoke, Va., assignors to K., F. & C. Tire & Rubber Corp., Roanoke, Va.
 1,277,831. Armored pneumatic tire. W. E. Baumberger, Sacramento, Calif.
 1,277,848. Fountain pen. D. Cameron, Edinburgh, Scotland.
 1,277,871. Reversible patch for vehicle curtains, etc. W. C. Craft, St. Paul, Minn.
 1,277,916. V. Gunbarrow, assignor to I. B. Kleintert Rubber Co.—both of New York City.
 1,277,953. Cushion tire. F. A. Krusemark, I. G. Funkhouser, and H. G. Carpenter, assignors to K., F. & C. Tire & Rubber Corp.—all of Roanoke, Va.

- 1,277,984. Resilient wheel. A. Mcletti, Beverly, assignor of one-fourth to H. Walter and one-fourth to A. L. Fancoast, both of Riverside—all in New Jersey.
 1,277,995. Rubber-covered roller. J. J. Musket, assignor to F. Reddaway & Co., Limited—both of Penkett, Manchester, Eng.
 1,278,036. Window cleaner. F. J. Shanley, Sr., assignor of one-third to J. Miller and one-third to J. D. Sullivan—all of Chicago, Ill.
 1,278,038. Tire. B. Harris, East Akron, O.

ISSUED SEPTEMBER 10, 1918.

- 1,278,090. Submersible boat for an individual, with rubber leg portions, etc. W. R. Barringer, Denver, Colo., assignor to The Submersible Boat Co., a Colorado corporation.
 1,278,139. Fabric shield for air-tubes of pneumatic tires. S. G. Gillespie, Charleston, W. Va.
 1,278,144. Inflatable life-preserver. W. W. Haupt, assignor to C. Krutcoff—both of Chicago, Ill.
 1,278,224. Split inflatable tire. F. G. Saylor, Quincy, assignor of one-fourth to G. A. Lufkin, Revere—both in Massachusetts.
 1,278,249. Union garment, with elastic band. W. B. Straub, Pottsville, assignor of one-half to F. C. Yings, Port Carbon—both in Pennsylvania.
 1,278,320. Shoe tread with resilient plug. G. S. Ellithorpe, Rogers Park, Ill.
 1,278,335. Girdle. E. Guggenheim, assignor to Treo Co., Inc.—both of New York City.
 1,278,375. File and rubber composition half-sole for boots and shoes. J. McI. Ogilvie, Toronto, Ont., Canada.
 1,278,416. Resilient tire filler. A. L. Austin, Cleveland, O.
 1,278,505. Heel of solid and sponge rubber. J. L. Forbes, Sturgis, S. D.
 1,278,604. Pneumatic cushion for crutch-head. A. R. Hunter, Welbeck, near Worksop, Eng.

THE DOMINION OF CANADA.

ISSUED JUNE 30, 1918.

- 184,714. Corset with elastic vest section. S. J. Newman, New Haven, Conn., U. S. A.
 184,753. Sheet rubber. The Gutta Percha and Rubber, Limited, assignee of W. Seward—both of Toronto, Ont., Canada.
 184,775. Pneumatic tire. M. S. Stevenson, Westminster, London, Eng.
 184,827. Life-preserving suit. A. L. Jaynes, Kansas City, Mo., U. S. A.
 184,839. Dust cap for tire-valves. H. P. Kraft, Ridgewood, N. J., U. S. A.
 184,850. Rubber-cushion rubber ring. W. J. Nicholls, Winnipeg, Man., Canada.
 185,044. Process. E. G. Balch, Newburyport, Mass., U. S. A.
 185,054. Pneumatic tire. F. S. Bryant, Reading, Mass., U. S. A.
 185,060. Tire. J. H. De Long, North Troy, N. Y., U. S. A.
 185,092. Hair curler. M. J. Peppard, Minneapolis, Minn., U. S. A.
 185,126. Rubber-covered finger band. M. J. MacMahon, Niagara Falls, Ont., Canada.
 185,172. Vehicle wheel. E. Gasper, assignor of one-half to E. Mosser—both of Grass Valley, Calif.

THE UNITED KINGDOM.

ISSUED SEPTEMBER 4, 1918.

- 117,238. Rubber tire. J. C. Anderson, Cushman Hotel, Washington, D. C., U. S. A.
 117,261. Teat cup. Aktiebolaget Mjolkkningsmaskinen Omega, 101 Valhallgatan, Stockholm, Sweden.
 117,305. Garment-supporting waistband with elastic inserts. A. Carliss, 7 Lawrence street, New Oxford street, London, England.
 117,310. Artificial limb with rubber toe-piece. F. H. Critchley, 21 Great George Square, Liverpool, England.
 117,343. Compressed gas-container of reinforced rubber. R. C. Jaeger, 95 Lamborough avenue, Corby, and F. Jaeger, Wereth Metal Works, Lee street, Wereth—both in Oldham, England.

ISSUED SEPTEMBER 11, 1918.

- 117,346. Shaving brush with rubber protector on handle. A. R. Culmer, 48 Durham Road, Holloway, London, England.
 117,385. Tire. W. D. McNault, 448 East Broadway, Toledo, O., U. S. A.
 117,403. Bottle stopper. Beaton, Clark & Co., Glass Works, George street, and F. Tweeddale, 40 Albany street—both in Rotherham, England.
 117,416. Heels, heel tips, soles, and sole tips made of rubber molded with metal inserts for riveting studs thereon. F. W. Wood, 3 Raws street, Bank Parade, Burnley, Lancashire, England.
 117,542. Lining for turn shoes, with elastic portion to permit turning. E. A. Gardner, 22 Hampton Place, Brooklyn, N. Y., U. S. A.
 117,547. Artificial limb with rubber blocks between leg and footpiece. H. Vearsley, 33 Clifton Road, Eccles, Lancashire, England.

THE UNITED KINGDOM.
ISSUED TO AMERICAN FIRMS.

- 383.175. The work RINEX—hoag and shoe soles composed of rubber and fiber, rubber predominating, such soles being sold separately from boots and shoes. The United States Rubber Co., 1790 Broadway, New York, N. Y. (Care of Mark Street, 1144 East Market Street, 28 Southhampton Buildings, London, W. C. 2.)
- 384.74. Representation of a winged sandal foot between the two parts of the shoe, the winged heels and patches for the heels and patches for boots and shoes, all of rubber. The Goodyear Tire & Rubber Co., 1144 East Market street, Akron, Ohio, U. S. A. (Care of Mark Street, 1144 East Market Street, 28 Southhampton Buildings, London, W. C. 2.)
- 384.76. Representation of a winged sandal foot between the two parts of the shoe, the winged heels and patches for the heels and patches for boots and shoes, all of rubber. The Goodyear Tire & Rubber Co., 1144 East Market Street, Akron, Ohio, U. S. A. (Care of Mark Street & Clerf, 57-58 Lincoln's Inn Fields, London, W. C. 2.)

AUSTRALIA.

ISSUED TO AMERICAN FIRMS.

- 117,890. Artificial tooth. J. J. Stubbs, City Park Road, Cardiff.
Boot-sole protector. G. W. Beldam, Boston Lodge, Windmill
Road, Ealing, and A. E. B. Viall, Glamorgan House, Bant-
leah—both in Manchester.
- 117,934. Exercising apparatus. A. Turio, 9 Via Orceffe, Genoa, Italy.
- 117,966. Tests for feeding-bottles. F. R. Graham-Yooll, Dulmow Towers,
Brantley, Kent.
- 117,977. Pneumatic tyre. P. De Las H. Malmis, 1 rue Martinez Molina,
d. L. B. Occantarella, 11 rue Ruiz Romero—both in Jaen,
Spain.
- 117,979. Inhaler. E. C. Ingleby, Woodville, Park Villas, Old Park Road,
Roundhay, Leeds.
- 117,995. The rubber. Dunlop Rubber Co., 14 Regent street, Westminster,
and F. J. Keegan, Dunlop Rubber Co., Alma street, Coventry.
- 118,042. Rubber sheet for receiving particles for sowing seeds in hot-
water bottles. C. E. H. Moor, 249 Victoria Park Road, South
Hackney, London.
- 118,026. Pneumatic arm-rest for crutches. E. J. Harrington, 30 Neville
street, Riverside, and J. McLaughlin, 38 Adam street—both
in Cardiff.

THE FRENCH REPUBLIC.

PATENTS ISSUED (WITH DATES OF APPLICATION).

- | | | |
|----------|----------------------|---|
| 487,218. | (October 16, 1917.) | Demountable wheel-rim. E. G. Bridd. |
| 487,231. | (October 17, 1917.) | Improvements in inner tubes. H. A. H. Shaw. |
| 487,232. | (October 17, 1917.) | Method of crasing. J. Combs. |
| 487,387. | (November 2, 1917.) | Improvements in garters. A. J. d'Ostroph. |
| 487,451. | (November 7, 1917.) | Compound to stop leaks in pneumatic tires. |
| | | <i>Interstate Tire Co., Limited.</i> |
| 487,518. | (November 10, 1917.) | Resilient wheel. F. Stitzel. |
| 487,519. | (November 13, 1917.) | Exercising apparatus. A. Turio, Genoa. |

AUSTRALIA.

MADE IN AUSTRIA.
 JULY 2, 1918. TO AN AMERICAN FIRM.

- 4,617. Tobacco or similar package lining of tin foil with paper backing attached by rubber compound, to protect goods from atmospheric changes. Combination Machine Co., assignee of J. Peterson, New York City, U. S. A.

ISSUED SEPTEMBER 10, 1918, TO AN AMERICAN.

NEW ZEALAND.

ISSUED SEPTEMBER 5, 1918.

- 39,727. Pneumatic tire. W. McEwen and W. C. S. Hosking—both of WAIPARA.
- 40,305. Means for reinforcing fabric for insertion of valves in pneumatic tires, etc. Dunlop Rubber Co. of Australasia, Limited, 105 Flinders street, Melbourne, assignors of S. Beard, 27 Weight street, Middle Park—both in VICTORIA, Australia.

TRADE MARKS.

THE UNITED STATES.

- N O. 94,828. The words **BULL DOG** followed by representation of head of a bulldog—two tubes. W. S. Nott Co., Minneapolis, Minn.
- 104,845. Conventional representation of Saturn and its rings above the word **SATURN**—betting of fabric and rubber. The Gutta Percha & Rubber Manufacturing Co., New York City.
- 107,944. Representation of a stenciled impression comprising the word **MAGNOLIA** within a diamond—rubber packing. Jenkins Rubber Co., Elizabeth, N. J.
- 109,646. Representative of a monkey clinging to a tail on which the word **LIVING** is written—self-vulcanizing patches for mending tires, rubber boots, hot-water bottles, etc. The Ever Grip Corp., St. Louis, Mo.
- 110,414. Profile representation of a soldier beneath the words **THE "CADET"**—fountain pens. Marshall Field & Co., Chicago, Ill.
- 110,426. Representation of an Indian's head—self-vulcanizing tire-patches. M. J. Ford, N. J.
- 110,854. Representation of a bulldog looking through a tire—pneumatic tires, tubes, and outer casings of rubber or rubber and fabric. Braender Rubber & Tire Co., Ford, N. J.
- 111,286. Tire with rings with horizontal bars superimposed—rubber tubes, fabric and rubber reinforcers, and fabric and rubber patches. Red Line, Inc., Grand Rapids, Mich.
- 111,428. Representation of a sack of flour with the words **SHOULDER**, **CLIMBER** and **ARM**. Doniger & Co., Inc., New York City.
- 111,628. The word **RUGO**—footballs, basketballs, and volley-balls. Rawlings Manufacturing Co., St. Louis, Mo.
- 112,111. The words **SUPER-SOXX**—rubber heels and soles. M. J. Feeley Co., Boston, Mass.

DESIGNS.

THE UNITED STATES.

- | | |
|--------|---|
| 52,296 | Tire. Term 14 years. Patented August 20, 1918. A. L. Breitenstein, Akron, assignor to The Rubber Products Co., Darberton—both in Ohio. |
| 52,298 | Non-skid tire. Term 14 years. Patented August 27, 1918. G. F. Armstrong, Rutherford, assignor to Armstrong Rubber Co., Newark—both in New Jersey. |
| 52,301 | Tire. Term 14 years. Patented August 27, 1918. A. L. Breitenstein, Akron, assignor to A. E. Pearce and H. H. Swan, Ashtabula—both in Ohio. |
| 52,361 | Tire. Term 14 years. Patented August 27, 1918. A. L. Breitenstein, Akron, assignor to A. E. Pearce and H. H. Swan, Ashtabula—both in Ohio. |



- 52,306. Tire. Term 3½ years. Patented August 27, 1918. G. K. Culp, Kansas City, Mo., assignor to United States Tire Co., New York City.
- 52,329. Tire. Term 14 years. Patented August 27, 1918. H. J. Leab, assignor to The Fisk Rubber Co.—both of Chicopee Falls, Mass.
- 52,352. Toy balloon. Term 7 years. Patented August 27, 1918. J. S. States, New York City.

A NEW ENTERPRISE IN WHICH AMERICAN, CANADIAN AND Japanese interests combine has been established in the International Co., with headquarters at Kobe, Japan. The concerns interested are Frank Waterhouse & Co., of Vancouver and Seattle, Iwai & Co., of Kobe, I. Shii, of Kobe and Senda, and Barnett & Co., of Calcutta. These concerns are shippers, importers and exporters of crude rubber, etc. C. E. Harvey has been appointed general manager of the new company.

Review of the Crude Rubber Market.

Copyright, 1918.

NEW YORK.

A REVIEW of the October market reveals but little activity, and at times, positive dullness in crude rubber of all grades. Manufacturers' orders for allocated and free rubber have been infrequent and unimportant in volume, reflecting the disturbed conditions prevailing at the mills through influenza and shortage of labor. Despite the marked inactivity, prices have been generally firm, both here and in the Far East. Government control of free rubber transactions, went into effect last month and resulted in restricting business in this commodity to some extent. Peace talk had little effect on the market other than giving added strength to the situation, both locally and at primary sources.

PLANTATIONS.—Allocated rubber, although in small demand during the month, was firm, the lowest price quoted for Latex being 37 cents and the highest 42 cents. Ribs ranged from 35½ cents to 40 cents. Free rubber prices ranged from 58½ to 62 cents for Latex and 57½ to 61 for Ribs.

PARÁS.—Prices on allocated Pará grades varied but little, the high and low being as follows: Upriver fine, 56 to 58 cents; Upriver coarse, 30 to 32 cents; Upper cauchó ball, 30 to 32 cents; Cameté, 21 to 22 cents. Prices on free rubber ranged from 62 to 66 cents for Upriver fine, 35½ to 37½ cents for Upriver coarse, 35 to 36 cents for Upper cauchó ball, and for Cameté, 25 to 29 cents.

CENTRALS.—All grades have been firm despite the small demand. The slight activity noticeable during the month is said to be the result of substantial orders placed by the manufacturers with dealers.

STATISTICS.—The total United States imports for September, 1918, were 5,151 tons, compared with 13,664 tons for the corresponding period in 1917. Plantation imports for September were 4,613 tons, compared with 11,192 tons last year. Imports of Pará rubber for September, 1918, were 311 tons, compared with 2,133 tons for the corresponding period in 1917. London and Liverpool imports of raw rubber for September were 3,535 tons, compared with 4,700 tons last year. Reexports for September were 892 tons compared with 1,870 tons a year ago.

NEW YORK SPOT QUOTATIONS.

Following are the New York spot quotations, one year ago, and allocation and free rubber prices on October 26. Government option prices, c. i. f. New York are given in the last column.

PLANTATION HEVEA—	Spot, Nov. 1, 1917.	Allocated, Oct. 26, 1918.	Free, Oct. 26, 1918.	Gov't Oct. 26, 1918.	
First latex crépe.....	63½	40	44	59	63
*Hevea first crépe.....	58	37	56	56	60
Amber crépe No. 1.....	57	36	55	55	60
Amber crépe No. 2.....	56	35	54	54	58
Amber crépe No. 3.....	55	34	53	53	57
Brown crépe, thin clean.....	52	33	52	52	56
Brown crépe, thin speckly.....	51½	29	44	44	50
Brown crépe, rolled.....	50	28½	43	43	49
Sheet, smooth, standard quality.....	61	39	57	57	62
*Hevea ribbed smoked sheets.....	60	38	56	56	61
Smoked sheet, plain standard quality.....	60	36	54	54	61
*Hevea plain or smooth smoked sheets.....	59	35	53	53	60
Unsmoked sheet, standard quality.....	57½	30	50	50	60
*Hevea unsmoked sheets.....	57	29	49	49	59
Colombo scrap, No. 1.....	45	24	40	40	46
Colombo scrap, No. 2.....	43	22	38	38	44
BRAZILIAN PARÁS—					
Upriver fine.....	63	58	62	68	68
Upriver medium.....	57	52	56	63	63
Upriver coarse.....	52	47	51	58	58
Upriver weak fine.....	52	46	50	57	57
Upper cauchó ball.....	39	32	37	40	40

	Spot, Nov. 1, 1917.	Allocated, Oct. 26, 1918.	Free, Oct. 26, 1918.	Gov't, Oct. 26, 1918.
BRAZILIAN PARÁS—				
Isengua fine.....	49	46	50	59
Islands medium.....	44	40	44	52
Islands coarse.....	37	20	20	27
Cameté.....	37	21	21	28
Lower cauchó ball.....	37	28	28	36
Peruvian fine.....	56	54	54	67
Tapajós fine.....	57	54	54	60
AFRICANS—				
Niger flake, prime.....	38	30	23	28
Benuea, extra No. 1, 28%.....	32	20	20	33
Benuea, No. 2, 32%.....	30	20	20	29
Congo prime, black upper.....	55	50	50	48
Congo prime, red upper.....	55	50	50	48
Rio Nunez ball.....	58	50	50	55
Rio Nunez sheets and strings.....	58	50	50	55
Central niggers.....	58	50	50	55
Massai sheets and strings.....	58	50	50	55
CENTRALS—				
Corinto scrap.....	39	34½	38	39
Esmeralda sausage.....	39	34½	38	39
Central scrap.....	39	34½	38	39
Central scrap and strip, 75 per cent.....	36	31	36½	37
Central wet sheet, 25 per cent.....	31	25	27	30
Guayule, 20% guarantee.....	28	Not allocated	35	48
Guayule, dry.....	28	Not allocated	35	48
MANICOBAS—				
Ceara negro heads.....	42½	40	40	37
Ceara scrap.....	24	15	15	37
Manicoba (basis 30% loss washing and drying).....	40	41	40	36½
Mangabeira thin sheet.....	35	38	38	35
EAST INDIAN—				
Assam crepe.....	59	50	50	58
Assam onions.....	34	30	30	34
Penang block scrap.....	36	30	30	37
BALATA—				
Block, Ciudad Bolívar.....	70	65	71	71
Colombia.....	51	50	51	61
Panama.....	51	47	48	58
Surinam.....	79	82	95	95
amber.....	85	97	97	97
PONTIANAK—				
Banjermassin.....	12	10	10	15
Palembang.....	12	10	10	16
Pressed block.....	18	15	15	25
Sarawak.....	18	15	15	14
GUTTA PERCHA—				
Gutta Siak.....	18	24	28	28
Red Macassar.....	200	200	200	300

*Rubber Association of America nomenclature.

RECLAIMED RUBBER.

The interest in reclaimed rubber during the last month has been of a routine nature. Rubber manufacturers have experienced unusual difficulties in plant operation on account of the scarcity of labor and the inroads of influenza. Business in reclaims is therefore expected to be more or less quiet until the prevailing conditions change for the better. Prices are practically unchanged.

NEW YORK QUOTATIONS.

OCTOBER 25, 1918.

Subject to change without notice.

Standard reclaims:	
Floating.....	lb. .35 @ .40
Friction.....	lb. .35 @ .40
Mechanical.....	lb. .12 @ .13
Reel.....	lb. .39 @ .45
Shoe.....	lb. .15 @ .15½
Tires, auto.....	lb. .18 @ .18½
Truck.....	lb. .13 @ .13½
White.....	lb. .24 @ .25

THE MARKET FOR COMMERCIAL PAPER.

In regard to the financial situation, Albert B. Beers, broker in crude rubber and commercial paper, No. 68 William street, New York, advises as follows:

During October the demand for commercial paper has been light, due largely to the drive by the Fourth Liberty Loan, but out-of-town banks have been buying moderately, the best rubber names going at 6½ to 6¾ per cent and those not so well known 6¼ to 7 per cent. Now that the loan drive is out of the way, the general demand for commercial paper should improve, but rates are likely to continue fairly high for the present.

COMPARATIVE HIGH AND LOW RUBBER PRICES.

Plantations—	October.		
	1918.	1917.	1916.
Alh. catel and Tree.			
First latex crepe	\$9.80 to \$9.82½	\$9.65 to \$9.67½	\$9.40 to \$9.42
Smoked sheet ribbed .....	.61 to .35	.64 to .61	.66 to .63½
Paras:			
Upriver, fine .....	.66 to .56	.66½ to .63½	.80 to .71
Upriver, coarse .....	.49 to .44	.49 to .44	.49 to .44
Islands, fine .....	.59 to .44	.55 to .50	.71 to .60
Islands, coarse .....	.25 to .20	.29 to .27	.33 to .29
Camela .....	.20 to .11	.30 to .28	.35 to .31

WEEKLY RUBBER REPORT.

GUTHRIE & CO., LIMITED, Singapore, report (September 12, 1918): The weekly rubber auction held yesterday and today saw a much improved demand and a welcome rise in prices. Fine ribbed smoked sheet sold up to 55½ cents per pound (8½ cents above last week's best), but the bidding for this grade was somewhat erratic, only a very few lots having fetched more than 54 cents. The demand for sheet ceased off in the latter part of the sale, and the highest paid in the concluding stage was 52½ cents. Fine pale crepe was in good demand throughout, up to 55 cents, which shows an increase of 7½ cents on the week. Lower grades were well competed for, at an advance averaging four to five cents. Small quantities of plain smoked and unsmoked sheet found buyers at fairly good prices. Some 676 tons were sold, out of 867 tons catalogued.

The following was the course of values:

	In Singapore, per Pound. ¹	Sterling Equivalent per Pound in London.
Sheet, fine ribbed smoked	48c to 55½c	1/6½ to 1/8½
Sheet, cool ribbed smoked	38 to 45	1/3½ to 1/4½
Sheet, plain smoked	37 to 40	1/3½ to 1/4½
Sheet, ribbed unsmoked	31½ to 40	1/1½ to 1/4½
Crepe, fine pale	27 to 45	1/7½ to 1/8½
Crepe, cool pale	18 to 50	1/3½ to 1/7½
Crepe, fine brown	34 to 50	1/3½ to 1/4½
Crepe, cool brown	26 to 33½	1/0½ to 1/2½
Crepe, dark	20 to 28½	1/0½ to 1/1
Crepe, bark	12½ to 24	1/8½ to 1/1½
Scrap, virgin and pressed	12 to 21½	1/0 to 1/1½
Scrap, loose	18½ to 20	1/0½ to 1/1

¹Quoted in S. S. currency.

ARRIVALS AT THE PORT OF NEW YORK.

TO NEW YORK.

AFRICANS.

	POUNDS.
SEPTEMBER —, By the —, from the Far East:	
Fred. Stern & Co.	26,880
SEPTEMBER —, By the —, from the Far East:	
Fred. Stern & Co.	33,600
SEPTEMBER —, By the —, from Africa:	
Fred. Stern & Co.	11,200
OCTOBER —, By the —, from Africa:	
Fred. Stern & Co. (Via New Orleans)	192,800
SEPTEMBER —, By the —, from the Far East:	
Fred. Stern & Co.	89,600
GUAYULE.	
SEPTEMBER 23, By the —, from Eagle Pass:	
Continental Mexican Rubber Co.	190,750

CRUDE RUBBER ARRIVALS AT PACIFIC COAST, AS REPORTED.

PLANTATIONS.

	POUNDS.
OCTOBER —, By the —, from Singapore:	
Meyer and Brown	134,400
OCTOBER —, By the —, from Singapore:	
Meyer and Brown	145,600
OCTOBER —, By the —, from the Far East:	
Meyer and Brown	500,000
By the —, from the Far East:	
Rubber Trading Co.	108,000
By the —, from the Far East:	
Rubber Trading Co.	56,000
By the —, from the Far East:	
Rubber Trading Co.	15,680
By the —, from the Far East:	
Rubber Trading Co.	60,480
By the —, from the Far East:	
Rubber Trading Co.	42,560
By the —, from the Far East:	
Rubber Trading Co.	125,440
By the —, from the Far East:	
Rubber Trading Co.	89,600

CRUDE RUBBER ARRIVALS AT PACIFIC COAST AS STATED BY SHIP'S MANIFESTS.¹

SEATTLE AND TACOMA.

PLANTATIONS.

	POUNDS.
OCTOBER —, By the —, from Yokohama:	
The B. F. Goodrich Co.	1,202,750
Swinehart Tire & Rubber Co.	20,250 1,223,000

MONTHLY IMPORTATIONS OF CRUDE RUBBER INTO THE UNITED STATES.

MONTH.	MANICHO.									
	PLANTATIONS.	PARAS.	AFRIC.	CENS.	GUAY.	MATTO.	FOR.	FOR.	TOTALS.	TOTALS.
1918.									1918.	1917.
January	15,301	710	...	140	33	...	...	...	16,084	12,788
February	9,715	3,108	68	79	120	...	...	...	13,108	10,162
March	14,999	1,699	52	132	287	...	...	...	17,161	18,624
April	12,703	481	58	37	129	...	...	...	13,425	13,000
May	13,783	2,019	174	121	...	...	...	...	16,288	18,411
June	21,787	2,146	10	12	60	...	...	...	24,124	15,099
July	13,857	2,260	28	88	59	...	...	...	16,092	13,416
August	8,473	1,744	61	32	111	...	...	...	10,421	17,290
September	4,613	311	124	29	74	...	...	...	5,151	13,664

(From figures compiled by The Rubber Association of America, Inc.)

CRUDE RUBBER ARRIVALS AT THE PORT OF NEW YORK.

In compliance with the Government's request, dates and names of vessels have been deleted in the following statistics:

(The Figures Indicate Weight in Pounds.)

	PARAS.	Fine.	Medium.	Coarse.	Caucho.	Cameta.	Totals.
AUGUST —, By the —, from MANAOS.							
Hagemeyer & Brunn	67,200	...	...	...	...	...	67,200
SEPTEMBER —, By the —, from Para and Manaos.							
H. A. Astlett & Co.	106,000	22,500	...	...	...	...	128,500
Hagemeyer & Brunn .....	...	44,800	44,800	...	...	...	89,600
OCTOBER —, By the —, from Para and Manaos.							
Meyer & Brown	113,000	...	...	...	...	...	179,200
OCTOBER —, By the —, from Manaos.							
Hagemeyer & Brunn	44,800	44,800	56,000	...	...	...	145,600

TO NEW YORK.

	POUNDS.
SEPTEMBER —, By the —, from Singapore:	
Charles T. Wilson Co., Inc.	47,175
OCTOBER —, By the —, from Kobe:	
Aldens' Successors, Limited	9,045
OCTOBER —, Transhipped by the — from Singapore via Kobe:	
Aldens' Successors, Limited	3,240
OCTOBER —, By the —, from Singapore:	
F. R. Henderson & Co.	209,925
Poel & Kelly	195,115
Smith & Schier	130,410
East Asiatic Co.	219,240
Meyer & Brown	365,250
United States Rubber Co.	2,206,850
Fred. Stern & Co.	16,200
Charles T. Wilson Co., Inc.	163,410
Rubber Trading Co.	58,590
J. Littlejohn & Co.	74,655
International Trading Co.	55,790
Various	48,465 3,755,915

TO SEATTLE, WASH.

	POUNDS.
SEPTEMBER —, By the —, from Singapore:	
Fred. Stern & Co.	9,045
J. T. Johnstone & Co.	359,505 368,550
OCTOBER —, Transhipped by the — from Singapore via Kobe:	
Various	37,935
OCTOBER —, By the —, from Kobe, via Vancouver:	
The B. F. Goodrich Co.	96,930
J. T. Johnstone & Co.	125,935
Various	117,590 350,855

	POUNDS.
24 cases short in dispute.	
OCTOBER —, By the —, from Yokohama:	
Poel & Kelly	29,700
Goodyear Tire & Rubber Co.	319,890
Robinson & Co.	40,105
East Asiatic Co.	106,440
Charles T. Wilson & Co., Inc.	101,415
Robinson & Co.	104,105
J. T. Johnstone & Co.	241,565
M. S. & C. Co.	119,880
Indo Malay Co., Limited ..	18,750
Various	50,490 1,483,370

TO TACOMA, WASH.

	POUNDS.
OCTOBER —, Transhipped by the — from Colombo via Kobe:	
Poel & Kelly	71,955
Edward Maurer Co., Inc.	111,375 182,330
OCTOBER —, By the —, from Yokohama:	
Peerless Rubber Co.	10,125

TO WATERTOWN, MASS.

	POUNDS.
OCTOBER —, By the —, from Singapore:	
Hood Rubber Co.	154,220

TO SEATTLE.

GUTTA.

	POUNDS.
OCTOBER —, Transhipped by the — from Yokohama:	
British Bank of South America (gutta percha)	3,105

SAN FRANCISCO.

PLANTATIONS.

	POUNDS.
[Figured 135 pounds net to the case and 150 pounds net to the bale.]	
SEPTEMBER —, By the —, from Batavia:	
I. T. Johnstone & Co.	40,635
Hannecy & Co.	37,665
Fred. Stern & Co.	16,875
Winter, Son & Co.	540
Harrisons & Crossfield ..	135
The Rubber Association of America, Inc.	799,185
M. S. & C. Co.	1,215
William H. Stiles	7,560
E. Boissevain Co.	106,415
General Rubber Co.	9,415
E. Maurer & Co., Inc.	135 299,775
SEPTEMBER —, By the —, from Hong Kong:	
Aldens' Successors, Limited ..	59,670
Goodyear Tire & Rubber Co.	34,505
Edward Maurer Co., Inc.	28,080
Poel & Kelly	5,535 127,790
OCTOBER —, By the —, from Hong Kong:	
The B. F. Goodrich Co.	195,450
R. F. Henderson & Co.	67,095
Meyer & Brown	117,480 380,025
*Two cases shortshipped.	
OCTOBER —, By the —, from Batavia:	
F. R. Henderson & Co.	92,340
Fred. Stern & Co.	95,100 187,440

¹Footnote—The figures under this head and under Crude Rubber Arrivals at Pacific Coast As Reported, have been obtained from different sources; quantities may, therefore, vary.

CUSTOM HOUSE STATISTICS.

PORT OF CLEVELAND, OHIO.—SEPTEMBER, 1918.

No imports or exports.

PORT OF NEW ORLEANS, LA.—SEPTEMBER, 1918.

No imports or exports.

PORTS OF SEATTLE AND TACOMA, WASH.—

JULY, 1918.

IMPORTS.	POUNDS.	VALUE.
India rubber	17,679,797	\$7,814,173
Gutta percha	224,120	73,846
Jelutong	61,845	3,711
Manufactures of india rubber ..	...	548
Totals	17,965,762	\$8,591,238

EXPORTS:	POUNDS.	VALUE.
India rubber boots—pairs...	105	\$421
Leather rubber shoes...	1,102	1,376
Automobile tires...	5,863	5,863
Other rubber tires...	515	515
Druggists' sundries...	126	5,863
All other manufactures of india rubber...	8,202	8,202
Total	\$71,963	

EXPORTS:	POUNDS.	VALUE.
Rubber scrap.....	47,240	\$2,653
Rubber boots—pairs...	3,696	12,087
India rubber shoes—pairs...	888	1,070
Automobile tires.....	61,743	283
Other rubber tires.....	233	5,177
Belting, hose, etc.....	2,432	12,813
Druggists' rubber sundries...	12,813	\$98,258
Total		

RUBBER STATISTICS FOR THE DOMINION OF CANADA.

The import and export figures by countries usually published in this table are withheld by the Canadian Government.

IMPORTS OF CRUDE AND MANUFACTURED RUBBER.

UNMANUFACTURED—free:	POUNDS.	VALUE.
Rubber and gutta percha, crude caoutchouc or india rubber.....	1,976,388	\$64,700
Rubber recovered.....	172,166	31,453
Hard rubber in sheets and blocks.....	20,743	20,743
Rubber substitute.....	107,419	11,180
Rubber powdered, and rubber gutta percha waste.....	341,621	28,192
Rubber thread, not covered.....	3,795	5,521
Clay.....	166,574	166,574
Total		

EXPORTS OF DOMESTIC AND FOREIGN RUBBER GOODS.

MANUFACTURED:	POUNDS.	VALUE.
Belting.....	8,121	12,813
Hose.....	15,177	76,653
Boots and shoes.....	201	37,559
Waterproof clothing.....	1,201	1,201
Tires.....	1,201	15,683
All other rubber goods.....	145,769	145,769

LONDON AND LIVERPOOL RUBBER STATISTICS.

The import and export figures by countries usually published in this table are withheld by the British Government.

IMPORTS:	POUNDS.	VALUE.
UNMANUFACTURED—free:		
Crude rubber:		
From—		
London.....	2,346,800	275,992
Liverpool.....	2,965,100	270,709
Totals	5,311,900	\$46,701
Waste and reclaimed rubber:		
From—		
London.....	1,000	7

EXPORTS:	POUNDS.	VALUE.
MANUFACTURED—		
Waste and reclaimed rubber:		
From—		
London.....	342,100	7,438
Liverpool.....	293,700	12,033
Totals	635,800	19,471

REEXPORTS:	POUNDS.	VALUE.
Crude rubber:		
From—		
London.....	2,280,700	240,898
Liverpool.....	315,600	32,380
Totals	2,555,300	273,278
Waste and reclaimed rubber:		
From—		
London and Liverpool.....		

UNITED KINGDOM RUBBER STATISTICS.

The import and export figures by countries usually published in this table are withheld by the British Government.

IMPORTS:	POUNDS.	VALUE.
UNMANUFACTURED—		
Crude rubber.....	5,191,500	\$82,873
Waste and reclaimed rubber.....	1,000	23
Gutta percha.....	680,200	103,699
Totals	5,872,700	686,595
MANUFACTURED—		
Boots and shoes.....	7,420	15,339
Automobile tires and tubes.....	14,568	14,568
Bicycle tires and tubes.....	926	926
Total	30,913	

EXPORTS:	POUNDS.	VALUE.
UNMANUFACTURED—		
Waste and reclaimed rubber.....	720,200	21,158
MANUFACTURED—		
Waterproof clothing.....	29,031	29,031
Boots and shoes.....	5,417	6,987
Insulated wire.....	8,654	8,654
Carriage tires and tubes.....	5,827	5,827
Automobile tires and tubes.....	58,221	58,221
Bicycle tires and tubes.....	13,470	13,470
Other manufactures of india rubber.....	118,951	118,951
Total	243,141	

EXPORTS—FOREIGN AND COLONIAL.

UNMANUFACTURED—	POUNDS.	VALUE.
Crude rubber.....	2,608,000	281,162
Gutta percha.....	680,200	103,699
Totals	2,608,900	281,385

MANUFACTURED—	POUNDS.	VALUE.
Boots and shoes.....	1	12
Automobile tires and tubes.....	14,568	14,568
Bicycle tires and tubes.....	926	926
Total	15,495	

RUBBER STATISTICS FOR THE UNITED STATES.

IMPORTS OF CRUDE AND MANUFACTURED RUBBER.

UNMANUFACTURED—free:	POUNDS.	VALUE.
India rubber:		
From—		
France.....	352,811	\$236,921
Netherlands.....	319,703	274,453
Portugal.....	1,180,500	53,455
United Kingdom.....	38,811,201	28,985,572
Canada.....	20	20
Central America.....	846,528	397,544
Mexico.....	2,073,575	851,422
Brazil.....	33,218,578	16,840,235
Peru.....	1,894,069	974,161
Other South America.....	1,522,409	722,605
British East Indies.....	70,878,310	46,145,882
Dutch East Indies.....	14,656,176	8,714,994
Other countries.....	299,357	125,481
Totals	193,053,327	\$104,862,643

UNMANUFACTURED—free:	POUNDS.	VALUE.
Bahala.....	180,513	109,949
Jelutong.....	846,660	74,090
Gutta percha.....	246,755	82,644
Totals	1,273,928	\$266,683
Rubber scrap.....	692,262	49,841

MANUFACTURED—dutiable:	POUNDS.	VALUE.
India rubber and gutta percha.....	178,771	36,106
India rubber substitutes.....		32,668

EXPORTS OF DOMESTIC MERCHANDISE.

MANUFACTURED—	POUNDS.	VALUE.
Automobile tires:		
To—		
France.....		\$68,000
United Kingdom.....		24,062
Canada.....		38,086
Mexico.....		78,013
Cuba.....		161,952
Argentina.....		174,177
Brazil.....		20,556
Chile.....		48,344
British India.....		47,879
Dutch East Indies.....		85,619
Australia.....		152,422
New Zealand.....		43,773
Philippine Islands.....		51,735
Other countries.....		210,974
Total		\$1,217,566
All other tires.....		54,815
Scrap and old rubber.....		24,062
Reclaimed rubber.....		125,358
Belting, hose and packing.....		343,887
Rubber boots.....		8,327
Rubber shoes.....		62,717
Druggists' sundries.....		53,670
All other manufactures of india rubber.....		490,652
Total, manufactured.....		\$1,072,622
Foreign goods.....		6,444

EXPORTS OF FOREIGN MERCHANDISE.

UNMANUFACTURED—	POUNDS.	VALUE.
Bahala.....	61,857	\$43,530
India rubber.....	352,263	195,636
Total, unmanufactured.....	414,120	\$239,166
Rubber scrap.....	777	23
Total, manufactured.....		\$21
India rubber.....		\$521
Substitutes, elastomers, etc.....		9,463
Total		\$9,984

EXPORTS OF RUBBER GOODS TO NON-CONTIGUOUS TERRITORIES OF THE UNITED STATES.

MANUFACTURED—	QUANTITY.	VALUE.
To—		
Alaska:		
Belting hose and packing.....		\$1,961
Boots and shoes.....	1,124	4,223
Other rubber goods.....		1,706
Total		\$7,890
To—		
Hawaii:		
Belting, hose and packing.....		\$948
Automobile tires.....		12,343
Other tires.....		36
Other rubber goods.....		264
Total		\$13,591

EXPORTS OF RUBBER GOODS TO NON-CONTIGUOUS TERRITORIES OF THE UNITED STATES.

MANUFACTURED—	QUANTITY.	VALUE.
To—		
Alaska:		
Belting hose and packing.....		\$1,961
Boots and shoes.....	1,124	4,223
Other rubber goods.....		1,706
Total		\$7,890
To—		
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MANUFACTURED—	QUANTITY.	VALUE.
To—		
Alaska:		
Belting hose and packing.....		\$1,961
Boots and shoes.....	1,124	4,223
Other rubber goods.....		1,706
Total		\$7,890
To—		
Hawaii:		
Belting, hose and packing.....		\$948
Automobile tires.....		12,343
Other tires.....		36
Other rubber goods.....		264
Total		\$13,591

EXPORTS OF RUBBER GOODS TO NON-CONTIGUOUS TERRITORIES OF THE UNITED STATES.

MANUFACTURED—	QUANTITY.	VALUE.
To—		
Alaska:		
Belting hose and packing.....		\$1,961
Boots and shoes.....	1,124	4,223
Other rubber goods.....		1,706
Total		\$7,890
To—		
Hawaii:		
Belting, hose and packing.....		\$948
Automobile tires.....		12,343
Other tires.....		36
Other rubber goods.....		264
Total		\$13,591

Official India Rubber Statistics for the United States.

For the Fiscal Years 1916-17-18 and June 1917-18.

IMPORTS OF CRUDE AND MANUFACTURED RUBBER.

	1917.		1918.		1916.		1917.		1918.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
UNMANUFACTURED—FREE.										
India rubber:										
From:										
France.....					509,675	\$312,144	616,772	\$300,052	508,017	\$225,803
Netherlands.....					367,083	107,266	69,212	.....	.....	.....
Portugal.....	401,320	\$131,344	230,447	\$73,770	2,773,656	1,094,841	3,719,703	1,439,498	538,076	220,133
United Kingdom.....	10,719,733	7,733,062	1,517,740	824,645	72,459,408	48,144,416	78,742,217	51,851,269	21,926,945	12,793,605
Central America.....	156,211	71,310	22,990	7,865	1,313,454	597,827	1,347,931	510,911	736,014	287,447
Mexico.....	124,799	53,490	182,109	67,071	3,261,507	1,262,291	1,488,636	611,209	1,033,087	451,915
Brazil.....	9,410,413	3,066,444	4,826,322	1,084,585	54,968,227	25,150,493	56,818,966	25,524,924	41,277,914	13,407,158
Peru.....	47,704	25,723	.....	.....	2,566,294	1,702,581	2,516,299	1,277,776	1,471,813	.....
Other South America.....	138,372	64,021	55,686	25,965	2,677,168	1,190,296	3,756,777	1,667,133	3,182,605	1,299,351
British East Indies.....	14,641,756	8,996,709	25,055,644	11,543,605	105,240,104	63,487,149	136,404,368	76,993,051	258,245,724	138,324,948
Dutch East Indies.....	11,539,504	7,505,375	11,121,740	7,427,811	20,232,963	11,483,271	45,027,410	27,239,501	53,663,857	30,735,474
Other countries.....	884,471	499,907	221,120	108,630	324,719	132,593	2,831,476	1,663,828	4,921,682	2,913,835
Totals.....	48,064,286	\$28,677,177	33,677,447	\$15,078,060	267,775,557	\$155,404,790	333,373,711	\$189,328,674	389,599,015	\$202,800,392
Palata.....	301,371	123,795	102,683	54,136	2,544,405	996,102	3,287,445	1,649,452	2,449,881	1,278,610
Guayule.....	412,341	123,136	409,946	29,403	2,816,068	880,813	2,854,372	764,484	4,307,539	1,341,095
Jelutong (Pontianak).....	.....	.....	.....	.....	27,858,335	1,332,262	.....	.....	7,481,291	474,369
Jelutong (Pontianak).....	4,837,217	505,883	.....	.....	.....	.....	23,376,389	1,044,022	9,994,371	501,450
Gutta percha.....	24,549	5,127	.....	.....	3,188,449	346,226	2,021,794	332,223	1,151,312	147,233
Totals.....	53,699,759	\$29,305,123	34,190,076	\$15,161,599	304,182,814	\$158,386,913	364,913,711	\$193,138,655	414,983,106	\$206,543,236
Rubber scrap.....	3,577,470	301,326	734,714	53,711	16,371,573	1,371,903	20,517,328	1,569,448	13,980,303	1,019,222
Totals, unmanufactured.....	57,277,229	\$29,606,444	34,924,790	\$15,215,310	320,554,387	\$159,858,096	385,431,039	\$194,888,103	428,963,913	\$207,562,458
MANUFACTURED—DUTABLE.										
India rubber and gutta percha.....		\$63,013		\$58,861		\$455,895		\$282,929		\$616,741
India rubber substitutes.....		5,641		24,074		16,179		39,815		1,346,438
Totals, manufactured.....		\$68,654		\$82,935		\$472,074		\$822,744		\$753,179

EXPORTS OF DOMESTIC MERCHANDISE.

MANUFACTURED—AUTOMOBILE TIRES.										
France.....		\$74,992		\$104,028		\$80,423		\$425,132		\$661,648
Russia in Europe.....		118,865		18,512		1,125,733		143,916		618,071
United Kingdom.....		319,357		334,677		1,176,836		2,485,939		1,766,518
Canada.....		47,095		84,348		236,811		257,413		777,984
Mexico.....		112,995		120,955		547,410		1,015,500		1,336,238
Cuba.....		88,994		292,753		488,329		1,301,344		1,650,340
Brazil.....		95,357		88,480		295,479		696,876		455,102
British India.....		12,007		1,825		147,820		148,820		116,411
Dutch East Indies.....		21,407		550		201,287		415,742		347,912
Australia.....		60,480		199,324		1,551,154		783,209		819,755
New Zealand.....		51,180		101,972		944,008		689,705		946,804
Philippine Islands.....		18,505		60,290		391,634		345,702		863,727
British South Africa.....		13,548		72,529		201,318		391,211		693,065
Other countries.....		238,899		413,828		1,193,081		1,591,623		2,529,837
Totals.....		\$1,463,499		\$1,891,865		\$17,396,217		\$123,301,201		\$13,977,671
Scrap and old.....		198,683		330,270		1,094,715		1,096,661		\$235,811
Reclaimed.....		325,676		350,462		613,943		814,199		3,284,958
Belting, hose and packing.....		409,841		404,873		2,986,953		3,532,384		4,578,396
Rubber boots.....		19,573		53,178		7,60,130		1,483,379		4,861,213
Rubber shoes.....		174,867		83,207		1,046,896		1,356,484		946,804
Insulated wire and cables.....		633,235		340,138		3,157,239		1,192,904		5,716,475
Druggists' rubber sundries.....		158,581		82,251		3,063,072		2,547,652		884,245
All other tires.....		715,537		498,696		7,290,345		8,265,509		6,194,816
Other rubber manufactures.....		.....		.....		.....		.....		.....
Totals, manufactured.....		\$3,650,796		\$3,532,666		\$37,310,613		\$38,297,279		\$39,059,456

EXPORTS OF FOREIGN MERCHANDISE.

Palata.....		.....		667,168		\$245,336		\$79,765		\$474,538
Guayule.....		.....		18,789		7,815		.....		473,915
Jelutong (Pontianak).....		69,440		\$9,228		\$8,723		.....		72,255
Gutta percha.....		.....		60,023		11,446		763		202,646
India rubber.....		484,092		\$311,967		\$43,181		1,355,908		8,208,228
Rubber scrap.....		.....		.....		724		1,626		74,497
Totals, unmanufactured.....		\$311,967		\$320,547		\$47,575		\$2,090,418		\$4,656,907

MANUFACTURED—GUTTA PERCHA.										
Gutta percha.....		\$2,309		\$699		8,587		\$421		\$18,216
India rubber.....		.....		.....		38,649		10,905		13,563
Totals, manufactured.....		\$2,309		\$699		\$39,186		\$11,326		\$31,779

SUBSTITUTES, ELASTIC AND SIMILAR.										
.....		.....		.....		.....		\$1,728		\$11,098

EXPORTS OF RUBBER GOODS TO NON-CONTIGUOUS TERRITORIES OF THE UNITED STATES.

MANUFACTURED—TO ALASKA.										
Belting, hose and packing.....		\$22,093		\$9,279		\$128,749		\$161,464		\$122,583
Boots and shoes.....		29,305		26,994		197,060		111,045		272,808
Other rubber goods.....		4,358		8,935		40,449		46,036		79,411
Totals.....		\$55,757		\$42,208		\$366,258		\$480,188		\$419,871
TO HAWAII.										
Belting, hose and packing.....		\$7,541		\$5,058		\$90,952		\$88,766		\$104,221
For automobiles.....		50,219		\$7,043		\$23,793		.....		1,082,331
Other tires.....		4,069		5,061		86,086		.....		81,682
Other rubber goods.....		18,818		14,743		50,660		195,001		2,264,464
Totals.....		\$80,647		\$81,936		\$791,491		\$1,105,487		\$1,149,698

*Beginning November 1. †July 1 to October 31.

MAJOR FACTORIES To Philippine Islands	1917.		1918.		1916.		1917.		1918.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Belting, hose and packing..		\$10,043		\$34,238		\$57,086		\$63,697		\$150,092
Boots and shoes.....	26,445	18,045	2,518	1,995	28,140	22,681	288,646	280,376	286,069	179,044
Tires.....		1,864		61,345		422,918		446,386		1,018,782
Other rubber goods.....		14,130		13,051		247,073		114,395		183,840
Totals.....		\$62,104		\$100,619		\$580,308		\$824,654		\$1,531,758
To Porto Rico.....										
Belting, hose and packing.....		\$5,376		\$6,816		\$45,339		\$52,118		\$50,367
Tires.....										
For automobiles.....		\$5,778		\$2,733		\$63,530		\$84,732		\$72,650
Other tires.....				130		34,382		8,717		14,803
Other rubber goods.....		11,525		13,072		24,073		104,653		116,595
Totals.....		\$73,843		\$72,731		\$551,506		\$750,180		\$954,415

THE MARKET FOR RUBBER SCRAP.

Copyright, 1918.

NEW YORK.

THE market for rubber scrap has, during the last month, remained very inactive. The dealers do not feel that there is a sufficient margin of profit in transactions at present prices, while the reclaimers see no reason for bidding higher than the current quotations. So everything is practically at a standstill. The few trifling changes that we note can hardly be considered as indicating what will happen shortly, and yet we believe that the stagnancy which has characterized the situation for some time will not last much longer. A break in the dullness would be welcomed.

BOOTS AND SHOES.—A slight demand was reported at 8½ to 8½ cents instead of the previous quotation of 8½ to 8½ cents. The increase was too small to stimulate a willingness to sell.

INNER TUBES.—Neither buyers nor sellers have shown the smallest interest. Prices remain unchanged.

MECHANICALS.—No demand to record. Insulated wire stripping fell one-half cent. Other quotations remain unchanged.

TIRES.—Prices continued to drop, except for white and mixed tires, each of which increased one-quarter cent. Transactions were negligible.

STATISTICS.—The London and Liverpool imports of waste and reclaimed rubber for August were only 1,000 pounds, while the exports were 635,800 pounds, value £19,471.

NEW YORK QUOTATIONS FOR CARLOAD LOTS DELIVERED.

OCTOBER 26, 1918.

Prices subject to change, without notice.

BOOTS AND SHOES.			
Arctic tops.....	lb.	\$0.01½ @	.01¾
Boots and shoes.....	lb.	.08 @	.08½
Trimmed arctic.....	lb.	.07 @	.07½
Untrimmed arctic.....	lb.	.06 @	.06½
HARD RUBBER.			
Battery jars, black compound.....	lb.	.02 @	
No. 1, bright fracture.....	lb.	.25 @	.26
INNER TUBES.			
No. 1, old packing.....	lb.	.22 @	.22½
new packing.....	lb.	.24 @	.24½
No. 2.....	lb.	.115 @	.11¾
Reinforced.....	lb.	.11½ @	.11¾
MECHANICALS.			
Black scrap, mixed, No. 1.....	lb.	.05¼ @	
No. 2.....	lb.	.04 @	
Car springs.....	lb.	.05 @	
Heels.....	lb.	.04 @	
Horse-shoe pads.....	lb.	.04 @	
Hose, air-brake.....	lb.	.05½ @	.05¾
fire, cotton lined.....	lb.	.02½ @	
garden.....	lb.	.02¼ @	
Insulated wire stripping, free from fiber.....	lb.	.04 @	
Matting.....	lb.	.01½ @	
Packing.....	lb.	.01½ @	
Red scrap, No. 1.....	lb.	.06 @	.06½
No. 2.....	lb.	.12 @	.12½
White scrap, No. 1.....	lb.	.06 @	
No. 2.....	lb.	.09 @	
TIRES.			
Pneumatic—			
Auto peelings, No. 1.....	lb.	.09¼ @	
No. 2.....	lb.	.09 @	.09¾
Bicycle.....	lb.	.04½ @	
Standard white auto.....	lb.	.05½ @	
Standard mixed auto.....	lb.	.04 @	
Ungraded, unguaranteed.....	lb.	.05 @	
White, G. & W.....	lb.	.05½ @	
M. & G. and U. S.....	lb.	.05¾ @	

Solid—	lb.	.05½ @
Carriage.....	lb.	.02 @
Irony.....	lb.	.05½ @
Truck.....	lb.	.05½ @

THE MARKET FOR COTTON AND OTHER FABRICS.

Copyright 1918.

NEW YORK.

WHILE conferences have been held for the purpose of agreeing on a price-fixing plan for American cotton, no definite policy has been announced. A study of actual costs of raising cotton was recently made by the American Exchange National Bank of New York City, the condensed results being as follows: Alabama, 20 cents; Arkansas, 23½ cents; Georgia, 21 cents; Louisiana, 18 cents; Mississippi, 25 cents; North Carolina, 24 cents; Oklahoma, 17½ cents; South Carolina, 16 cents; Tennessee, 26 cents; Texas, 17½ cents.

Although the market shows a decline since last month, the technical position of the commodity is said to be strong at this writing. On September 26 there was considerable activity among buyers due to predictions of frosts in Texas and middling uplands spot advanced to 32.40 cents, compared with 35.15 cents a month ago. The market closed October 30 at 30.75 cents.

EGYPTIAN COTTON.—The British Board of Trade announces that prices on orders placed with the Egyptian Cotton Control Commission or with Alexandria export houses shall be those ruling for each government type at the time the order is registered, provided the quantity does not exceed the amount allocated to the buyer.

The Egyptian Cotton Control Commission is authorized to charge 1½ per cent on the free on board prices of each type of cotton when orders are sent direct to them. If placed with the Commission through Alexandria export houses the commission will be paid to the house employed.

The 1918 crop conditions, while favorable at this time, will not equal last year's production, due to the decrease in acreage. The following are the planting percentages:

	1918.	1917.	1916.
Sakellarijales.....	7.4	67.5	63.4
Ashmouni (Upper).....	20.9	22.0	20.8
Afifi-Asidi-Nubari.....	5.9	10.0	13.9
Abassi-Jaounech Various.....	0.8	0.5	1.9
	100.0	100.0	100.0

SEA ISLAND COTTON.—Southern markets have been generally quiet as farmers refuse to sell unless they can obtain an equivalent of 70 cents cost insurance freight, for Extra Choice and Fancy. The growers' report is convincing evidence that this year's crop will be very small. Up to October 18, only 9,789 bales have been ginned compared with 43,691 bales last year.

DRILLS, DUCK, OSNABURGS AND SHEETINGS.—These materials are under government control at fixed prices ruling until November 16. Deliveries to the Government of the new raincoat cloth—39-inch and 64-68-inch, 4,000-yard sheeting—are extended through to the end of January.

TIRF FABRICS.—The market is quiet and inquiries are few and far between. Fabric mills are busy on government orders running to next spring. Prices are unchanged.

NEW YORK QUOTATIONS.

OCTOBER 26, 1918.

Prices subject to change without notice.

AIRPLANE AND BALLOON FABRICS:

Wamsutter, S. A. I. L. No. 1, 40-inch.....yard None
No. 4, 38½-inch.....\$0.45 @

ASBESTOS CLOTH:

Brake lining, 2½ lbs. sq. yd., brass or copper inser- .85 @
tion lb. 21½ lbs. sq. yd., brass or copper inser- .90 @
tion lb.

BURLAPS:

32—7-ounce100 yards 13.50 @
32—8-ounce 13.70 @
40—7½-ounce 14.85 @
40—8-ounce 15.00 @
40—10-ounce 17.25 @
40—10½-ounce 17.50 @
45—7½-ounce None
45—8-ounce None
45—9½-ounce 19.00 @
48—10-ounce 19.30 @

DRILLS:

37-inch 2.35-yardyard 1.25
37-inch 3.25-yard 1.20 1
37-inch 2.60-yard 1.23

THREE-LEAF WIDE:

40-inch 3.96-yardyard 1.18
40-inch 2.40-yard 1.25 1
52-inch 1.90-yard 1.30 1
59-inch 1.60-yard 1.37 1
59-inch 1.85-yard 1.34 1
59-inch 1.94-yard 1.33 1

DUCK:

CARRIAGE CLOTH:

38-inch 2.00-yard enameling.....basis per pound 1.62
46½-inch 1.44-yard 1.41
51½-inch 1.35-yard 1.61
56½-inch 1.62
61-inch 1.63
72-inch 1.64

MECHANICAL:

Hosepound 1.62 1
40-inch, 10-ounce 1.64 1
Belting 1.62 1

MOLLANDS, 40-INCH:

Acmeyard 1.30 @
Endurance 1.33 @
Penn 1.34 @

OSNABURGS (PART WASTE):

29½-inch 3.33-yardyard 1.16 1
30-inch 2-ounce 1.22 1
30-inch 8-ounce 1.25 1

RAINCOAT FABRICS:

COTTON:

Bombazine 64 x 60 water-repellent.....yard 1.23 @
60 x 48 do water repellent..... 1.20 1
Cashmeres, cuttun and wool, 36-inch, tan, blue and black..... 1.85 @
Twills 64 x 72..... 1.90 @ 1.32 1
64 x 102..... 1.35 @ 1.37 1
Twill, merized, 36-inch, tan and olive..... 1.34 1
blue and black..... 1.35 1
Tweed 1.81 @ 1.00
Tweed, printed 1.91 @ 1.25
Plaids 60 x 48..... 1.20 1
56 x 44..... 1.20 1
Repp 1.37 @ 1.45
Surface prints 60 x 48..... 1.21 1
64 x 60..... 1.21 1

IMPORTED WOOLEN FABRICS SPECIALLY PREPARED FOR RUBBERIZING

—PLAIN AND FANCIES:

63-inch, 3¼ to 7½ ounces.....yard 1.15 @ 1.25
36-inch, 2¼ to 5 ounces..... 1.80 @ 1.85

IMPORTED PLAID LINING (UNION AND COTTON):

63-inch, 2 to 4 ounces.....yard 1.00 @ 1.00
36-inch, 2 to 4 ounces..... 1.52 1 1.75

DOMESTIC WORSTED FABRICS:

36-inch, 4½ to 8 ounces.....yard 1.75 @ 2.00

DOMESTIC WOOLEN PLAID LININGS (COTTON):

36-inch, 3¼ to 5 ounces.....yard 1.27 1 @ 1.50

SHEETINGS:

40-inch 2.35-yardyard 1.25
40-inch 2.50-yard 1.23 1
40-inch 2.70-yard 1.22 1
40-inch 2.85-yard 1.21 1
40-inch 3.15-yard 1.22 1
40-inch 3.75-yard 1.17 1

JACKET:

Delawareyard 1.30 @
Scanykill 1.35 @

SILKS:

Canton, 38-inchyard 1.30 @
Plain 1.40 @
Schappe, 36-inch 1.52 1 @

STOCKINETTES:

COTTON, 52-INCH:

D—14-ounceyard 1.85 @ 1.90
E—11½-ounce 1.60 @ 1.65
F—14-ounce 1.85 @ 1.90
G—8-ounce 1.75 @ 1.80
H—11-ounce 1.70 @ 1.85
I—9-ounce 1.60 @ 1.65
Knitaback 1.75 @ 2.00

WOOL, 52-INCH:

A—14-ounceyard 1.75 @
B—14-ounce 2.25 @
C—14-ounce 2.50 @

TIRE FABRICS:

17½-ounce Sea Island, combed.....square yard 1.60 @ 1.70
17½-ounce Egyptian, combed..... 1.30 @ 1.40
17½-ounce Egyptian, carded..... 1.20 @ 1.30
17½-ounce Peckers, combed..... 1.10 @ 1.15
17½-ounce Peckers, carded..... 1.00 @ 1.05*Nominal.
†Government prices until November 16, 1918.TIRE
FABRICSJENCKES
SPINNING
COMPANYPAWTUCKET
RHODE ISLAND

SEA ISLAND COTTON CROP MOVEMENT.

FROM AUGUST 1, 1918, TO SEPTEMBER 31, 1918.

	Receipts.	
Stock on hand, August 1, 1918.....	194,849	1917-18.....
Savannah, 15,247; Charleston, 51.....	15,247	1,034
Received at Savannah.....	867	1,032
Received at Charleston.....	720	
Received at Jacksonville.....	432	1,313
Received at Brunswick.....		
Received at Norfolk.....		

Totals.....	16,623	3,989
Loss exports.....	1,246	1,649

Stock September 27, 1918—		
Savannah, 10,965; Charleston, 412.....	11,377	2,348
Crop in sight at all ports to date.....	859	2,945

EXPORTS.

	From—	South.	North.	Total
	Brown.	Mills.	Mills.	
Savannah.....	134	3,995	450	4,589
Charleston.....		225	225	
Jacksonville.....		432		432
Brunswick.....				
Norfolk.....				
Totals.....	134	4,652	450	5,236
1917-18.....		1,408	178	1,646
	134	13,184	172	13,600

↑ Increase.
(Compiled by John Mailbach & Co., Savannah, Georgia.)

EGYPTIAN COTTON CROP MOVEMENT.

FROM AUGUST 1, 1918, TO JULY 31, 1918.

	1917-1918	1916-1917	1915-1916
To—			
Liverpool.....	225,253	214,726	216,382
Manchester.....	130,715	134,358	139,268
Other United Kingdom ports.....	137,761		
Total shipments to Great Britain.....	493,729	349,084	355,650
To—			
France.....	39,517	39,743	60,972
Spain.....	9,571		
Italy.....	32,240	38,776	52,691
Switzerland.....	6,527	31,731	42,920
Russia.....		65	785
Greece.....	8,155	124,330	159,156
Total shipments to Continent.....	81,155	124,330	159,156
To—			
United States.....	75,420	137,156	194,229
India.....	16,174	1,253	25,365
Japan.....	16,174		
Total shipments to all ports.....	656,518	612,045	734,400
Total crop (interior gross weight), estimate.....	1,126,199	4,726,518	

↑ Centar equals 98 pounds.
(Compiled by Davies, Bonasia & Co.)

THE MARKET FOR CHEMICALS AND COMPOUND-INGREDIENTS.

Copyright, 1918.

NEW YORK.

LACK of interest in base metals characterized the market. There will probably be no change in the price of copper after November 1, although one had been expected. Tin is inactive and it is reported that fixed prices will probably not be announced. Government consumption of lead continues heavy, its general distribution being under strict control. There has been a slight decline in antimony.

The market for rubber chemicals has been quiet due to the Liberty Loan, peace talk, and influenza. Prices have held firm with a tendency toward higher prices for aluminum flake, barytes, lithopone, etc., due to higher cost of labor, freight and other things. Trade should open up in the near future, except in certain lines under government regulation.

ANILINE OIL.—A continuous demand is depleting the available stocks, so the undertone is firm.

BARYTES.—Twice as much as the present consumption was the average, but, in spite of that, increased prices are expected on account of the higher costs of production.

CARBON TETRACHLORIDE.—By its control of chlorine and its

products the Government now regulates business in this commodity. There is little to be had.

LITHOPONE.—Lack of cars and of labor is giving trouble to the manufacturers, who can easily sell all that they can produce. Prices remain unchanged.

SULPHUR FLOUR.—Prices for delivery after January 1 have not been quoted, but it is thought that they may be a trifle lower.

SULPHURIC ACID.—There is the keenest demand for what little is obtainable, as the Government regulates not only the production but the distribution. The new price schedules are now applicable.

TALC.—The demand is fair, but producers find it hard to meet it, owing to lack of labor. Spot deliveries are at a small premium.

TAR AND PITCH.—Tar has advanced 25 cents a barrel. Demand, chiefly for government needs, is strong, and the stocks are small.

WHITING.—Producers seem to find it difficult to provide firms doing work for the Government with the quantities they need. Other concerns must be satisfied with what they can secure. Prices are unchanged.

ZINC OXIDE.—The demand is better than for other pigments, government requirements are increasing. No change in price.

NEW YORK QUOTATIONS.

OCTOBER 26, 1918.

Prices subject to change without notice.

ACCELERATORS, ORGANIC.

Accelerator N. C. C.....	lb.	\$30 @
Accelerator.....	lb.	\$2.62 @
Accelerator.....	lb.	\$80 @
Accelerator No. 2.....	lb.	\$80 @
Accelerator No. 1.....	lb.	\$60 @
Aldehyde ammonia crystals.....	lb.	1.00 @ 1.10
Aniline oil.....	lb.	.31 @
Ammonia.....	lb.	.75 @
Barytes.....	lb.	.75 @
Exceller.....	lb.	.65 @
Hexamethylenamine (Vitamin).....	lb.	.85 @
Hexamethylene tetramine (powdered).....	lb.	1.00 @ 1.20
Paraphenylenediamine.....	lb.	3.50 @ 4.00
Tensile.....	lb.	.60 @
Thiourethane.....	lb.	.50 @
Velocite.....	lb.	.50 @
Vitamin.....	lb.	.65 @

ACCELERATORS, INORGANIC.

Lead, dry red.....	lb.	11.50 @
sublimed blue.....	lb.	.09 1/4 @
sublimed white.....	lb.	.10 @
white, basic carbonate.....	lb.	.09 1/4 @
white, basic sulphate.....	lb.	.02 @ .02 1/2
Lime, fleur.....	lb.	.10 1/4 @
Litharge, domestic.....	lb.	.15 @
English.....	lb.	.11 @
sublimed.....	lb.	.13 @
Magnesium, carbonate.....	lb.	.12 @
calcined, heavy (Manhattan brand).....	lb.	.15 @
light.....	lb.	.05 1/2 @
Magnesium oxide.....	lb.	.06 1/2 @
Magnesia, calcined, powdered.....	ton	50.00 @ 65.00

ACIDS.

Acetic, 58 per cent (old).....	cent.	4.91 @ 5.16
Glacial, 99 per cent (carboys).....	cent.	19.50 @
Cresylic, 97-99 per cent, straw color.....	gal.	1.12 @
95 per cent, dark.....	gal.	1.02 @
Muriatic, 30 degrees.....	gal.	2.05 @ 2.30
Nitric, 36 degrees.....	cent.	1.60 @ 6.85
Sulphuric, 66 degrees.....	ton	25.00 @

ALKALIES.

Soda ash, 76 per cent (old).....	lb.	.08 @
Soda ash (old).....	lb.	.04 1/2 @

COLORS.

Black.....	lb.	.05 @
Bone, powdered.....	lb.	.09 @
Carbon, black (sacks, factory).....	lb.	.14 @
Ivory black.....	lb.	16 @ 30
Lampblack.....	lb.	.15 @ .45
Oil soluble aniline.....	lb.	.75 @ 1.50
Rubber black.....	lb.	.06 @

DYES.

Cobalt.....	lb.	.25 @ .35
Prussian.....	lb.	1.35 @
Citramarine.....	lb.	.22 @ .50

BROWN.

Iron oxide.....	lb.	.03 @
Ochre, domestic.....	lb.	.02 @ .04
imported.....	lb.	.05 @ .16
Siena, Italian, raw and burnt.....	lb.	.07 @ .14
Umber, Turkey, raw and burnt.....	lb.	.05 @ .06

Green:			
Chrome tile.....lb.	•15	@	
Oxide of chromium (casks).....lb.	•85	@	
India rubber.....lb.	•75	@	
Red:			
Antimony, crimson, sulphuret (casks).....lb.	•50	@	
Antimony, "Mephisto" (casks).....lb.	•60	@	
Antimony, golden, sulphuret (casks).....lb.	•25	@	
Antimony, golden, "Mephisto" (casks).....lb.	•30	@	
Antimony, golden, sulphuret, States brand, 16-17%.....lb.	•28	@	
Antimony, red sulphuret, States brand.....lb.	•25	@	
Antimony, vermilion sulphuret.....lb.	•55	@	
Arsenic, red sulphide.....lb.	•45	@	
Indian, pure bright.....lb.	•08	@	•12
Iron oxide, reduced grades.....lb.	•12	@	
Iron oxide, pure bright.....lb.	•15	@	•17
Oil soluble aniline, red.....lb.	•2.50	@	3.00
Oxymony, orange.....lb.	•2.00	@	
Venetian.....lb.	•02½	@	•06
Vermilion, English, pale, medium, dark.....lb.	2.00	@	2.10
White:			
Aluminum bronze powder.....lb.	•80	@	
Aluminum oxide (P. cases).....lb.	1.00	@	
Aluminum oxide, superior.....lb.	1.25	@	
Lithopone, imported.....lb.	•08	@	None
Lithopone, domestic.....lb.	•08	@	0.84
Ponolith (carloads, factory).....lb.	•07½	@	•08
Rubber makers' white.....lb.	•08	@	0.84
Zinc oxide, Horsehead (less carload, factory):			
"XX".....lb.	10½	@	
"Special".....lb.	•11	@	
French process, red seal.....lb.	1.34	@	
"white seal".....lb.	1.34	@	
"white seal" (States brand).....lb.	1.44	@	
"white seal".....lb.	•12	@	
Zinc sulphide, pure.....lb.	None		
Yellow:			
Cadmium, tri-sulphate.....lb.	•2.68	@	
Cadmium, sulphide.....lb.	•2.00	@	
Chrome, light and medium.....lb.	•28	@	•32
India rubber.....lb.	•1.00	@	
Ochr., light or dark.....lb.	•02½	@	
Oil soluble aniline.....lb.	•2.00	@	
Zinc chromate.....lb.	•50	@	

COMPOUNDING INGREDIENTS.

Aluminum flake (bbls. factory. Less 5% carload).....ton	29.00	@	
Aluminum oxide (sacks factory. Less 5% carloads).....ton	26.00	@	
Aluminum oxide.....lb.	•18	@	
Ammonia carbonate, powdered.....lb.	•14	@	14½
Asbestine (bags).....lb.	•12½	@	
Asbestos (bags).....lb.	22.00	@	25.00
Asbestos (bags).....ton	25.00	@	35.00
Barium, carbonate, precipitated.....ton	60.00	@	
Barium, sulphate, precipitated.....ton	60.00	@	
Barytes, pure white.....ton	35.00	@	
off color.....ton	30.00	@	35.00
uniform floated.....ton	35.00	@	
Basofo.....lb.	•05½	@	
Blanc fixe.....lb.	•05½	@	•06
Bone ash.....lb.	•06	@	
Chalk, precipitated, extra light.....lb.	•05	@	0.54
Chalk, precipitated, heavy.....lb.	•04	@	0.44
China clay, domestic.....ton	15.00	@	22.00
Cotton linters, clean mill run, E. & B. factory.....bale	50.00	@	60.00
Fossil flour.....ton	50.00	@	60.00
Glass, high grade.....lb.	•36	@	•45
medium.....lb.	•31	@	•35
low grade.....lb.	•14	@	•20
Graphite, flake (400 pound bbl.).....lb.	•04	@	•08
amorphous.....lb.	•04	@	•08
Ground glass FF. (bbls.).....lb.	•03	@	
Infusorial earth, powdered.....ton	60.00	@	
boiled.....ton	60.00	@	
Mica, powdered.....lb.	•05	@	•06
Plaster of Paris.....lb.	2.00	@	3.00
Plasticum.....lb.	•15	@	
Pumice stone, powdered (bbl.).....lb.	•04	@	•08
Rotten stone, powdered.....lb.	•02½	@	0.44
Rubber flux.....lb.	•15	@	
Rubidite.....lb.	•38	@	
Silex (silica).....ton	25.00	@	40.00
Sonapont, powdered, domestic.....ton	50.00	@	55.00
imported.....ton	None		
Starch, powdered corn (carload, bbls.).....cwt.	4.52	@	
Gumacac (carloads factory).....ton	20.00	@	40.00
Talc, American.....ton	None		
French.....ton	50.00	@	
Tripol earth.....ton	60.00	@	
boiled.....ton	70.00	@	
Tyre-lith.....lb.	•06	@	
Whiting, Alha (carloads).....cwt.	•90	@	1.00
commercial.....cwt.	1.25	@	
gliders.....cwt.	1.20	@	1.35
Paris, white, American.....cwt.	1.50	@	1.75
English clifstone.....cwt.	1.75	@	
Wood pulp XXX.....ton	40.00	@	45.00

MINERAL RUBBER.

Gilsonite.....ton	55.00	@	
Gumacac (carloads factory).....ton	55.00	@	57.00
M. R.....ton	65.00	@	
M. R. X.....ton	100.00	@	
Liquid rubber.....lb.	•14	@	•15

Pioneer, carload, delivered.....ton	55.00	@	
less carload, factory.....ton	60.00	@	
Richmond.....ton	75.00	@	
No. 64.....ton	65.00	@	
Refined Elaterite.....ton	175.00	@	
Raven M. R.....lb.	•02½	@	•85

OILS.

Corn, crude.....lb.	•18½	@	
refined.....lb.	•21½	@	
Glycerine (C. P. drums).....lb.	•58	@	•59
Glycerol.....lb.	•12	@	
Linsed, raw (carloads).....gal.	1.50	@	
Linsed compound.....gal.	•85	@	
Palin.....lb.	•70	@	•50
Paraffin.....gal.	•40	@	•41
Petrolatum.....lb.	•08	@	
Petroleum grease.....lb.	•06½	@	
Pine, steam distilled.....gal.	•60	@	
Pine tar.....gal.	•37	@	
Rapeseed, refined.....gal.	1.85	@	
blown.....lb.	•23½	@	
Rosin.....gal.	•66	@	
Soya bean, crude.....lb.	•18½	@	
Tar (cases).....gal.	•35	@	•36

SOLVENTS.

Acetone (drums).....lb.	•25½	@	•25½
methyl (bbls.).....gal.	1.50	@	
C. P. (drums).....lb.	•22	@	•27
90 cent cent.....gal.	•22	@	
Beta-naphthol, resublimed.....lb.	1.10	@	
ordinary grade.....lb.	•70	@	
Halowax oil No. 1000 (f. o. b. Wyandotte).....lb.	•30	@	
No. 1001 (f. o. b. Wyandotte).....lb.	•35	@	
Naphtha, motor gasoline (steel bbls.).....gal.	•24½	@	
73 @ 75 degrees (steel bbls.).....gal.	•30	@	
68 @ 70 degrees (steel bbls.).....gal.	None		
V. M. & P. (steel bbls.).....gal.	1.25	@	
Toluol, pure.....lb.	•23½	@	
Turpentine, spirits.....lb.	•67	@	67½
wood.....gal.	•58	@	•64
Venice.....lb.	•66	@	•66
Osmaco reducer.....gal.	•45	@	
Zylol, pure.....gal.	•45	@	•50
commercial.....gal.	•30	@	•35

SUBSTITUTES.

Black.....lb.	•11	@	•18
White.....lb.	•13	@	•25
Brown.....lb.	•10	@	•23
Brown factice.....lb.	•10	@	•23
White factice.....lb.	•11	@	•24
Cordex.....lb.	•30	@	
Enerpine.....lb.	•30	@	
Paragot soft and medium (carloads).....cwt.	17.08	@	
hard.....lb.	14.50	@	
Toughnite.....lb.	•40	@	

VULCANIZING INGREDIENTS.

Carbon, blanchide (drums).....lb.	•07½	@	•10
etrachloride (drums).....lb.	•50	@	•60
Lead, black hyposulphite (Black Hypo).....lb.	None		
Orange mineral, domestic.....lb.	1.41	@	
Sulphur chloride (drums).....lb.	•07½	@	•08
Sulphur, flour, Brooklyn brand (carloads).....cwt.	3.90	@	
pure soft (carloads).....cwt.	3.40	@	
superfine (carloads, factory).....cwt.	2.75	@	

(See also Colors—Antimony)

RESINS AND PITCHES.

Castella gum.....lb.	•70	@	
Pine tar, retort.....bbl.	15.50	@	
" " kiln.....bbl.	14.50	@	
Pitch, Burgundy.....lb.	•08	@	
" " coal tar.....lb.	•01½	@	
" " pine tar.....lb.	•02½	@	
" " junco.....lb.	•11	@	
Resin, Pontianak, refined.....lb.	None		
" " granulated.....lb.	None		
" " fused.....lb.	None		
Rosin, K.....lb.	•06	@	
" " powdered.....lb.	•10	@	
Shellac, fine orange.....lb.	•78	@	82
Tar, kiln.....lb.	13.00	@	13.50
" " retort.....bbl.	14.00	@	14.50

WAXES.

Wax, beeswax, white.....lb.	•63	@	•65
" " cerasin, white.....ton	20.00	@	21
" " ceresin, white.....ton	20.00	@	21
" " ozokerite, black.....lb.	•60	@	•61
" " green.....lb.	•35	@	•36
" " montan.....lb.	•23	@	•25
" " substitute.....lb.	•13	@	
" " paraffin, crude 118/120 m. p. (cases).....lb.	•15	@	
" " 123/125 m. p. (cases).....lb.	•15	@	
" " refined 128/130 m. p. (cases).....lb.	•15	@	
" " 133/136 m. p. (cases).....lb.	None		

*Nominal.



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NOVEMBER 1, 1918.

No. 2

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of all kinds—tensile strength, plasticity,
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ERICK J. MAYWALD, F.C.S.
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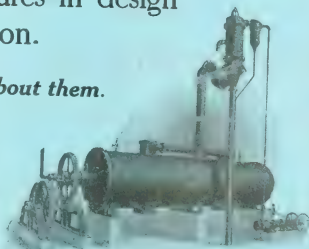


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WAR SERVICE AND PEACE SERVICE.

THE present War Service Committee of the American rubber trade represents a perfection of organization of which few industries can boast. In its personnel of more than one hundred men—leaders in rubber manufacture, in crude and reclaimed rubber, and in the distribution of the rubber products—it embraces every division of the industry. The committee, notable because of the accomplishments of its members in the normal fields of endeavor, is especially distinguished by the work it has done in putting the whole industry upon a war basis. It is no exaggeration to say that no half dozen industries combined offered so many perplexing problems or so many troublesome details, all of which were solved and adjusted with eminent fairness and in record time. With peace in sight the trade is faced with problems of even more gravity than those presented by the war, for upon their right solution depends its future.

It took from four to six months to put the rubber industry on a war footing. Now that it is thoroughly organized, and accustomed to working for the general good, it will be its own fault if many troublesome customs and handicaps of the past again come into existence. For example, individual initiative would not be

hampered nor manufacturers injured if many partially obsolete types of goods were dropped, others standardized, and specialties given over to those who created them.

There is also in sight the very vital readjustment of labor and wages that will come as a part of the reconstruction. The cost of living will not become less for a time at least, and war wages are likely to be demanded and the strike threat freely employed.

It has been hinted also that international free trade may be one of the peace articles finally agreed upon. If Germany were democratized and repentant, it is hard to imagine Belgians and French weeping over the graves of the mangled babies, and buying German-made nipples. Nor can we conceive of British householders using German garden hose with its constant suggestion of flame throwers and poison gas. Even with custom houses abolished on all borders it would be years before German goods of any sort would find buyers. The result would be that the United States would become the dumping ground for everything German; for not having suffered in any such measure as our Allies, we would forget more easily. As in the past, the shopper would not know or care as to the origin of rubber goods provided they were attractive and reasonable in price.

On the other hand, for three years markets formerly supplied by England, France, Italy and Belgium became our own because of the war. It might, therefore, be unfair and impolitic to erect a tariff wall about our own country and still try to get the lion's share of the world's trade. It was just that temptation that led Germany down into the pit.

From the beginning, questions of many sorts are likely to fall to the War Service Committee for consideration. This is no surmise, for the Government has already indicated that upon just such committees will fall certain details of reconstruction. Many problems, however, are international in their scope and cannot be settled by any one country, no matter how strong or wise. If a league of nations is formed, scores of economic questions will be settled and some of them possibly to the disadvantage of the rubber trade. That is, unless it is alert in forecasting conditions and timely in its representations.

Looking at the matter broadly every country will be faced by similar problems. That decisions may be made after full knowledge and fairly, an international rubber committee created from the membership of existing rubber organizations representative of all the allied nations is therefore needed. America, the biggest, the best-organized, should take the lead in forming such a committee, calling conferences, and taking up questions in advance of the time of solution. The rubber industry, potentially one of the most important, should have its place, if not at the peace table, at least in the adjustment councils that settle after-war conditions. Such a committee might decide that the "right of self-determin-

ation" as relating to nations big and little may possibly belong also to corporations and to individuals. Then manufacturers and shipowners could give employment to whom they chose and workmen would be free to join unions or not without interference.

The rubber trade pays big freights on crude rubber, compounding ingredients and manufactured goods. Before the war German ocean lines delivered goods to certain markets at prices none could compete with because of governmental subsidies. Possibly the "freedom of the seas" contemplates a fair adjustment of rates that will do away with this evil.

Standardization as a result of the war necessity has made marvelous progress. Perhaps peace will demand international standardization. If this is toward the world's rubber trade it has much work before it, for in many lines it will be revolutionary.

Brazilian rubber producers, together with English, American, Dutch, French, Japanese and Belgian rubber planters, would have an unexampled opportunity to arrange for fair and adequate supply, standard grades, and perhaps come to some understanding as to minimum and maximum prices and restrictions of product.

German methods wherever they affect the rubber trade, the counterfeiting of trade-marks, the theft of patents, the sale of products at prices below cost, forced contracts with neutrals whereby German goods only shall be purchased for a period of years after the war, and plans of German manufacturers and exporters to use Swiss and other neutral registration for German goods, could easily be balked by an international committee.

Moreover, the international trade rivalries, misunderstandings and jealousies that are sure to crop up may be done away with through personal contact. America is coming out of the war the richest of all the nations involved. Nations rich and poor owe her billions. It is a dangerous position for any nation to be in. That is why the rubber and other trades should affiliate closely with their confreres the world over, and keep alive the spirit of friendship which the war has brought about.

BOOM IN RUBBER TO COME.

A TREMENDOUS expansion in American industry is sure to come, once peace is here and the problems of reconstruction settled upon. America's part in feeding the world assures prosperity for the farmer. Stocks in the hands of the wholesalers and retailers are small. Thus our domestic market will call for rubber goods as never before. Moreover, the shops of Europe are empty. Belgium, France, and indeed all of the Allies are short of goods. Then, too, Germany, Austria-Hungary with its new republics, Turkey and Russia, are to be in the market ere long. Great although the American rubber trade is, its capacity is likely to be tested to the uttermost.

PLANNING THE WORLD'S TRADE.

THE Teuton pre-war policy of industrial penetration was successful in enabling Germany to obtain an exceedingly dangerous hold on the chemical, dye, and other American Industries; on the Australian zinc industry; in securing a practical monopoly of wolfram, manganese ore, copra, oil seed, and practical control of the French bauxite mines. These are but a few of the instances of the burrowing methods that resulted in a stream of valuable imports pouring into Germany, and leaving again in a manufactured form to deluge the world. In 1913 the total imports amounted to almost seventy-three million tons, valued at some \$2,750,000,000.

To-day Germany, staggering under huge debts, in spite of revolution, and facing a bitterly hostile world, still hopes for world domination. The great industries are, to be sure, for the moment, paralyzed. Even before the armistice few rubber plants operated, four-fifths of the textile factories were idle, while no less than one-third of the small plants had been closed. The merchant marine, too, was in sorry plight, two-thirds of the vessels seized or locked in neutral harbors, which more than offset the trade in the Baltic.

In addition to all this, German manufacturers are faced with grave labor problems. The demands of war, continually depleting their working forces, caused vacancies which were but partly filled, and even then by persons not only inferior in skill but also in general health. As for the returning soldiers it is doubtful if they will be the obedient bond-slaves they were prior to 1914. These adverse circumstances, however, have whipped the industrialists to unheard of endeavor.

A German union of technical and scientific societies aims at a closer cooperation between science and industry; there still remain the many consolidations in nearly all industries; there also is the ministry of economic affairs to reestablish foreign trade; the Eastern Territories Neo-German Economic Society; the association for the promotion of the export of German goods under guise of neutral products, and the huge combine to exploit various industries in foreign countries.

All of this is known to the Allies and there has been a general overhauling of pre-war trade tactics and a demand for protection of home industries.

France has decided to recast all old trade compacts and from April, 1919, will do business on equal terms. Her chemists and industrial leaders have joined forces to restore and enhance her commercial prosperity.

England is instituting a comprehensive system for inventorying the wealth of her colonies, with plans to make herself and them independent of foreign countries for any article raw or manufactured.

In America the work of building up new industries to provide goods formerly supplied by Germany has gone on apace. Much thought and labor is also being expended on the task of retaining and expanding the busi-

ness brought by the war. The same is true of Italy, Japan and to a smaller extent of the South American countries.

International Free Trade may be "sound," but at present it is not very loud.

CRUDE RUBBER A "KEY MATERIAL."

"KEY INDUSTRIES" are given much attention in Great Britain at present. For example, dye manufacture is the key industry to textile and paper production. Germany once possessed this key, but for various reasons was unable to use it from 1914 up to the present time. Pass-keys were therefore made in both Great Britain and the United States and the industries unlocked for all time.

Exhibitions of "Key Materials" are now on in various great English centers. Of the many materials shown, that of paramount interest is crude rubber. As matters stand, crude rubber actually is represented by several keys. Great Britain of course holds the biggest, the Dutch East Indies and Brazil each hold big ones, while those of lesser size dangle from the fingers of French Indo-China, the Central American countries, and a very tiny one from the Philippines.

Nor are we without rubber key materials here in the United States. Reclaimed rubber is one. Neither should we forget that the great guayule project goes on apace and will one day be a fairly sizable key. Take it all in all the crude rubber keys are in good hands and if any holders, for good and sufficient reasons, lock their doors, others will open the wider.

THE BAFFLING BOTANY OF RUBBER.

AT the Centennial Exposition of 1876, Austin G. Day, one of the most enterprising and successful of rubber men, showed a collection of "rubber-producing plants." The collection consisted of sixteen varieties, with the following names:

<i>Ficus Brasiliensis</i>	Brazil
<i>Ficus lucida</i>	Brazil
<i>Ficus macrophylla</i>	Australia
<i>Ficus Australis</i>	Australia
<i>Ficus elastica</i>	East Indies
<i>Ficus rigida</i>	East Indies
<i>Ficus religiosa</i>	Palestine
<i>Euphorbia monstrosa</i>	Cuba
<i>Euphorbia triangularis</i>	South Africa
<i>Euphorbia Mackaii</i>	Java
<i>Euphorbia splendens</i>	Mexico
<i>Euphorbia punicia</i>	Mexico
<i>Monstera deliciosa</i>	Brazil
<i>Galipia odoratissima</i>	Brazil
(more correctly called <i>Cusparia</i>)	
<i>Aralia Cookii</i>	Brazil
<i>Pereskia grandiflora</i>	Mexico

Of all that list just one, *Ficus elastica*, has actually served as a commercial source of rubber. To be sure, nearly all the species of *Ficus* and *Euphorbia* bear latex, but few have furnished rubber which has been sold in the markets of the world.

The other four species belong to families which do not ordinarily produce latex at all, and no scientific authority includes either of them among rubber-bearing plants. All of which simply proves that Mr. Day knew more about rubber in the factory than in the tree.

Such a mistake is not at all surprising to one who reviews the assertions which have been made at different times by men of high rank as botanists. The Kickxia of Africa was described by the authorities of Kew Gardens in England from the leaves of one species and the flowers of another. An English botanist, sent to Central America to gather plants of *Castilloa elastica* for experimental cultivation in Ceylon, got a plant which may have been a species of *Perebea* or a species of *Castilloa*, but which certain was not *Castilloa elastica*.

Nor has the day of mistaken and careless naming gone by. Quite recently eminent authors have spoken of the Caucho rubber of South America as being the product of the *Castilloa elastica*. Yet it was long ago described in detail by Warburg as being the product of a very different tree, the *Castilloa Ulei*.

AT THE INDUSTRIAL CONFERENCE DECEMBER 3RD TO 6th there will assemble at Atlantic City the most representative body of business men that the world has yet seen. Called together by the Chamber of Commerce of the United States will be delegates from 300 groups of interests. The discussions will embrace the many and varied problems of reconstruction, as for example, cancellation of contracts, continuation of government control, labor, conservation, prices, credit and similar subjects. In all of these questions the rubber trade has a very live interest, and from the conclusions reached is sure to derive much benefit.

GERMAN PROPERTY IN THE UNITED STATES AND ITS Territories has been taken over and sold by the Alien Property Custodian. The money derived from the sales runs into hundreds of millions of dollars. Most of it is German money. If, however, an American can prove that any portion of it is his, he has the privilege of entering a claim for it within six months of the close of the war. It is possible also that war damages may also be settled from this fund, as part of the property sold once belonged to the sometime Imperial German Government.

TWENTY BIG CARS STRIPPED OF THEIR TIRES BY THIEVES in twenty days is the record of a Western city. As it is almost impossible to identify tires once stolen, owners are adopting the plan of branding both tires and tubes with their initials. This is of great assistance to the police in recovering stolen tires. Branding the thieves would be better.

War News of the Rubber Industry.

Relaxation of Regulation of Industries. Export License Procedure for Samples. Important Publications on Fuel Technology. An Industrial Reconstruction Conference. Liberty Loan Oversubscribed Nearly a Billion. Cuba Oversubscribes Fourth Loan. Enemy-Owned Concerns to Be Sold. Basatin Plantation Taken Over. Bituminous Storage Limit Off. Withdrawal of Regulations Affecting the Exportation of Raw Cotton. The War and Brazilian Rubber. Some Raincoat Makers Acquired. Rubber Men Active in War Work Drive. United War Work Fund Is \$283,179,038. Christmas Presents for Hood Boys in France. To Serve Goodyears in France. Service Notes and Personals. Letters from the Front. Why the Red Cross Needs Hundreds of Millions.

RELAXATION OF REGULATION OF INDUSTRIES.

FOLLOWING the signing of the armistice with Germany, the War Industries Board issued a new order, modifying restrictions and curtailments, of which we publish the section that interests our readers:

SECTION 3.

Restrictions upon industries and manufacturers in their production, or in their consumption of materials for commodities hereafter in this section enumerated, as such restrictions are expressed in orders and circulars issued by this Division, are hereby so modified that such restrictions for the respective periods provided for in such several orders and circulars shall be less than the restrictions to the extent of fifty per cent of such restrictions. The commodities referred to are (among others) as follows: clothes wringers, baby carriages, bicycles, hand stamping and marking devices, sporting goods, pneumatic automobile tires.

The production of tire manufacturers who have been operating on the basis of a 50 per cent curtailment of the monthly average for the eighteen months ended June 30, 1918, has, as of November 15, been increased to 75 per cent. All restrictions curtailing the production of rubber articles, except automobile casings and tubes under six inches, have been withdrawn.

EXPORT LICENSE PROCEDURE FOR SAMPLES.

The War Trade Board announces the following regulations governing the exportation of samples to be used in the solicitation of orders:

1. Samples of no commercial value of any commodity may be exported in the personal baggage accompanying a traveler without an individual export license, under special export license RAC-49, issued to the Customs Service. (See W.T.B.R. 195, issued August 13, 1918.)
2. Samples of no commercial value of commodities *not* on the Export Conservation List may be exported by mail without an individual export license, under special export license RAC-52 issued to the Postoffice Department, to the following countries: Abyssinia, Afghanistan, Argentina, Belgium, Bolivia, Brazil, China, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, Egypt; the colonies, possessions, and protectorates of Great Britain; the colonies, possessions, and protectorates of France; Guatemala, Haiti, Honduras; the colonies, possessions, and protectorates of Italy; Japan; the colonies, possessions, and protectorates; Liberia, Monaco, Nepal, Nicaragua; the colonies, possessions and protectorates of the Netherlands; Oman, Panama, Paraguay, Peru, Salvador, San Marino, Siam, and Uruguay, excluding any portion of the foregoing occupied by the military forces of Germany or its allies. (See W. T. B. R. 246; issued October 9, 1918.)
3. Samples of no commercial value of any commodity may be exported by mail without an individual export license, under special export license RAC-52, to the United Kingdom, France, Italy and Japan, the colonies, possessions, and protectorates, excluding any portion thereof occupied by the military forces of Germany or of its allies. (See W. T. B. R. 246, issued October 9, 1918.)
4. To facilitate further the exportation by mail of samples of no commercial value, when an individual export license is required, the War Trade Board, hereafter, will consider issuing licenses of a special type, valid for three months after issuance, permitting the exportation, by mail only, to one or more consignees, whose names need not be specified in the application for the license, of a single parcel or an unlimited number of parcels of samples of no commercial value to be used in the solicitation

of orders. Such licenses will not be granted for shipments of samples to persons in enemy or ally of enemy countries; or to persons with whom, the applicant has reason to believe, trade is prohibited by the Trading with the Enemy Act. (For particulars regarding applications for licenses, see W. T. B. R. 280, issued October 25, 1918.)

IMPORTANT PUBLICATIONS ON FUEL TECHNOLOGY.

Estimates made earlier in the fuel year that approximately 160,000,000 car miles, equivalent to a 5 per cent increase in production, would be saved in the coal year through the operation of the zone system for the distribution of bituminous coal are being more than realized. The nation's supply is now such that with patriotic economy it will probably be sufficient for the winter's requirements. There must, however, be frugality in the use of electricity, gas and coal, and intelligent firing of furnaces and stoves. To this end the United States Fuel Administration and the Bureau of Mines have issued numerous pamphlets and scientific papers on fuel technology and conservation which are of great value to the operator of every power plant, large or small. If all would substitute scientific methods for the haphazard practices which have too often been the rule, the possibility of shut-downs due to lack of fuel could probably be definitely averted.

AN INDUSTRIAL RECONSTRUCTION CONFERENCE.

A war emergency and reconstruction conference of the war service committees of the various American industries has been called by the Chamber of Commerce of the United States to be held at Atlantic City, December 4, 5 and 6. The subjects to be discussed include reconstruction; industrial relations; raw materials and their control; price control; economic legislation affecting combinations; export and import operations; finance, etc., and all information adduced will be placed at the command of the Government. The several war service committees, including that of the rubber industry, will confer with the commodity chiefs of the War Industries Board, and it is hoped that definite recommendations can be formulated covering the reconstruction period, with the possibility of creating an executive committee empowered to gather data and to function with industries to meet the many problems that the nation's industries will be called upon to solve with the end of the war.

LIBERTY LOAN OVERSUBSCRIBED NEARLY A BILLION.

Early estimates regarding the oversubscription of the Fourth Liberty Loan have proved to be far too conservative. Total subscriptions amounted to \$6,989,047,000, or 164 per cent. more than the \$6,000,000,000 sought to be raised. Every Federal Reserve District exceeded its allotted quota. It was the greatest war loan ever floated by this or any other nation. Through the four Liberty Loans and War Savings Stamps the country has raised a total of \$17,852,000,000, not including unaccepted oversubscriptions.

Bonds of the Fifth Loan to cover the remaining war expenditures and to be offered in the spring, will be of short maturity, probably five years or less.

CUBA OVERSUBSCRIBES FOURTH LOAN.

Patriotic Cuba oversubscribed her \$6,000,000 quota for the Fourth Liberty Loan by \$4,752,850. There were 23,000 subscribers.

ENEMY-OWNED CONCERNS AND INTERESTS TO BE SOLD.

German owned or controlled interests in the following concerns are to be sold at public auction by the Alien Property Custodian A. Mitchell Palmer, in accordance with the Government's plans for their complete Americanization:

The Boonton Rubber Manufacturing Co., Boonton, New Jersey, manufacturer of composite insulation; The Bayer Co., Rensselaer, New York, manufacturer of drugs and dyestuffs, which includes the Synthetic Patents Co., owner of organic accelerator patents; the Goetze Gasket and Packing Co., New Brunswick, New Jersey, manufacturer of gaskets and packing devices; the Schaeffer & Budenberg Manufacturing Co., New York, manufacturer of engineering instruments; the J. P. Devine Co., Buffalo, New York, manufacturer of vacuum dryers; the Werner & Pfleiderer Co., Saginaw, Michigan, manufacturer of machinery; Robert Soltan & Co., Inc., Mamaronck, New York, manufacturer of gutta percha specialties.

BASILAN PLANTATION TAKEN OVER.

The only *Hevea* plantation that is producing rubber and is in United States territory is the Basilan Plantation on Basilan Island, Mindanao, Philippine Islands. Most, if not all, of the stock was owned by Germans and has been taken over the Alien Property Custodian.

BITUMINOUS STORAGE LIMIT OFF.

All storage restrictions on bituminous coal were removed on November 22 by the United States Fuel Administration in conformity with the action of the War Industries Board in cancelling its preferential industries list. Anthracite coal is not affected, however, by this ruling.

Every industry and every householder in the country now may store as much bituminous coal as desired or obtainable, as the action of the War Industries Board removes the necessity for the Fuel Administration to distinguish longer among different classes of industrial plants.

The restrictions just raised provided for the accumulation by the consumers in the preference classes defined by the War Industries Board of reserve stocks of bituminous coal, in accordance with their location in relation to various mine fields and their classification on the preference schedule.

WITHDRAWAL OF REGULATIONS AFFECTING THE EXPORTATION OF RAW COTTON.

The War Trade Board, in cooperation with the Committee on Cotton Distribution of the War Industries Board, makes the following announcement:

On and after December 2, 1918, no individual licenses will be required for the exportation of raw cotton to Great Britain, France, Italy, Belgium or Japan. A special export license (No. RAC-57) will be issued to the proper customs officials at points of exit, who will be authorized to pass shipments in accordance therewith.

The regulation governing exports of raw cotton to Spain (W. T. B. R. 319, November 15, 1918), whereby the quantity exportable to Spain was limited and allotted among the various shippers, is withdrawn, effective November 22, 1918, and applications will be considered looking toward the granting of licenses freely.

Applications to export raw cotton to other destinations will be considered and granted freely, and where agreements exist, international licenses will be granted in accordance therewith.

The regulation affecting the exportation of raw cotton (W. T. B. R. 265, October 11, 1918), which required that the grade and staple be specified on applications to export raw cotton and that the applicant also disclose the existence of an actual sales contract, or that there had been a freight allotment or engagement, is withdrawn, effective November 22, 1918.

THE WAR AND BRAZILIAN RUBBER.

The great changes brought about by the world war, and the losses sustained by German traders in Brazil are reported by "Wileman's Brazilian Review," as follows:

Before the declaration of war by Brazil against Germany, in spite of all disabilities, enemy traders succeeded in shipping 12.7 per cent of the crop in 1915-16, 6.7 per cent in 1916-17, but only 176 tons, or 0.6 per cent in 1917-18, and even that insignificant quantity prior to the declaration of war by Brazil against Germany on October 26, 1917. Since then no enemy rubber has been shipped at all.

The way in which both Allied and Brazilian trade has benefited by the restrictions placed on enemy traders is shown by the progression of the coefficient of exports of Allied traders from 48.8 per cent of the crop in 1915-16 to 51.1 per cent in 1916-17, and 52 per cent in 1917-18, and of the coefficient of Brazilian and Portuguese exporters from 23.9 per cent in 1915-16 to 31.6 per cent in 1916-17 and 33.0 per cent in 1917-18, inclusive of small shippers practically all Brazilian or Portuguese.

The term "Allied" is used merely to distinguish between Brazilian and Portuguese and British, American and French shippers.

Before the war, German shippers accounted for 61.6 per cent of the crop and some idea of the losses their traders must have suffered can be gathered from contemplation of the now total suppression of this branch alone of their overseas trade.

Since the incorporation of Suter & Co. with Stowell Bros., the coefficient of British exporters has steadily improved from only 11.5 per cent (excluding Suter & Co.) for 1915-16 to 28.9 per cent (including Suter & Co.) for 1916-17 and 26.4 per cent for 1917-18. Among British houses Stowell Bros. now rank first with 19.2 per cent of the 1917-18 crop, followed by Suarez Bros. with 4.7 per cent, and Adelbert Alden with only 2.5 per cent against 7.5 per cent for 1916-17 and 6 per cent for 1915-16.

The only American house of importance, the General Rubber Co. of Brazil, likewise improved its position from 20.9 per cent of the 1915-16 crop to 20.4 per cent in 1916-17 and 21.1 per cent in 1917-18, the largest coefficient of all.

The French house of Fradelizi & Co. shows improvement from 0.5 per cent for 1915-16 to 2.4 per cent in 1916-17 and 4.5 per cent for 1917-18.

Exclusive of small unspecified shippers, the largest Brazilian-Portuguese exporter of the 1917-18 season was again Tancredo Porto with 6.8 per cent of the crop, as against 8.7 per cent for that of 1916-17 and 5.1 per cent in 1915-16. The next largest was J. Marques & Co., with 6.2 per cent, as against 14.4 per cent in 1916-17 and 11.8 per cent in 1915-16. Pires Teixeira and J. C. Araujo both lost ground, but two new comers, J. A. Mendes and Chamie & Co. (previously included among small shippers), accounted between them for 10 per cent of the crop, besides the Bank of Brazil with 3.0 per cent and "small" unspecified shippers with 6.6 per cent as against 6.7 per cent in 1916-17 and 12.7 per cent in 1915-16.

The improvement in the coefficient of transit rubber (Peru) from 2.4 per cent in 1915-16 to 5.3 per cent in 1916-17 and 7.8 per cent in 1917-18 is remarkable in view of the distance, over 1,000 miles, between Pará and Iquitos, now cut off from direct communication with either Europe or the United States.

Restriction of imports by the United States dates from May 6, 1917. During the first half of the 1917-18 crop, exports from the Amazon to the United States, in spite of the falling off of 1,000 tons in entries, were only 594 tons under those of the previous season. During the next half-year exports to the same destination show a tremendous shrinkage of 9,515 tons or 61.3 per cent compared with the same period 1916-17. It is a healthy sign to note that from 2,400 tons last year, receipts at Pará and Manaus dropped in July to only 620 tons and stocks from 8,145 on July 1 to 6,807 on August 1.

SOME RAINCOAT MAKERS ACQUITTED.

The Kenyon Co., Brooklyn, New York, charged with sending defective raincoats to the Army, was exonerated by the verdict rendered in its case on November 9, both as to the corporation and its employees. The blame for permitting defective raincoats of this company's manufacture to be sent to France is laid to the Quartermaster's Department of Army, since it was shown by the evidence that laxness of inspection therein created conditions worse than in the manufacturing establishments. Government inspectors were found to be untrained for the work and careless in inspection.

Harry E. Lazarus, another raincoat maker, on trial under the Sabotage Act, and also charged with having bribed Charles L. Fuller, an inspector of the Quartermaster's Department, to pass defective raincoats, was acquitted on November 19, for lack of evidence. Inspector Fuller, however, is under arrest and awaiting disposition of his case by Federal authorities.

RUBBER MEN ACTIVE IN WAR WORK DRIVE.

The United War Work Campaign of Greater New York was conducted last month for the purpose of raising funds for the following organizations:

Y. M. C. A., Y. W. C. A., National Catholic War Council (K. of C.), Jewish Welfare Board, War Camp Community Service, American Library Association, and the Salvation Army.

In this drive the rubber industry was represented by the following committee:

CHAIRMAN.

Bertram G. Work, The B. F. Goodrich Co.

VICE-CHAIRMAN.

F. E. Titus, The B. F. Goodrich Co.

DIVISION CHAIRMEN.

TIRES: Horace De Lesser, Ajax Rubber Co., Inc.

CRUDE RUBBER: W. J. Kelly, Poel & Kelly.

BOOTS AND SHOES: Homer E. Lawyer, United States Rubber Co.

MEDICAL RUBBER GOODS: S. H. Jones, United States Rubber Co.

MECHANICAL RUBBER GOODS: Henry Spadone, Gutta Percha and Rubber Manufacturing Co.

RECLAIMED RUBBER: Clarence H. Low, United States Rubber Reclaiming Co., Inc.

HARD RUBBER: F. G. Achelis, American Hard Rubber Co.

UNITED WAR WORK FUND IS \$203,179,038.

On November 25 subscriptions to the United War Fund were announced as amounting to \$203,179,038, or \$32,679,038 in excess of the amount originally asked by the seven war relief organizations. This is the largest sum ever raised as an outright gift in the history of the world. Only two states, Pennsylvania and Minnesota, failed to exceed their quotas, and it is believed that these states will be "over the top" when returns from Philadelphia and Minneapolis are in. Philadelphia, a "war chest" city, has not yet made an appropriation to the fund, while Minneapolis postponed its drive until next month.

CHRISTMAS PRESENTS FOR HOOD BOYS IN SERVICE.

The War Relief Club of the Hood Rubber Co., Watertown, Massachusetts, has practically decided to send to Hood boys in service overseas a check for 20 francs (\$4) with a Christmas folder, a Christmas card and Christmas letter. The boys can then buy what they need most. Hood boys in service in America will receive Christmas boxes costing \$4 to \$5 each. They will contain smoking materials, candy and a comfort bag of cretonne 12 by 14 inches in which will be found one pair of socks, two handkerchiefs, shoe strings, safety pins, pocket comb, safety razor, mirror, soap, pad paper, envelopes, pencils, knife, pipe, puzzle or toy, and a small towel. Two knitting machines have been installed for producing the 600 pairs of socks needed.

TO SERVE GOODYEARITES IN FRANCE.

The Goodyear Tire & Rubber Co., Akron, has opened an information bureau at 17 rue Saint Florentine, Paris, for the benefit of Goodyearites in service over there. Four rooms are occupied, one of which is a general reading and lounging room, with writing materials, magazines, newspapers, etc. An attempt will be made to keep a card index file of all Goodyear men in France.

SERVICE NOTES AND PERSONALS.

Robert L. Baird, son of Robert B. Baird and vice-president of the Rubber Trading Co., 9-15 Murray street, New York City, became a member of K Company, 23d Regiment, National Guard, in February, 1918. On October 2, 1918, he enlisted in the Officers' Training Camp, Field Artillery, Camp Zachary Taylor, Louisville, Kentucky, as a member of the 27th Training Camp. He is 29 years of age and has been an officer of the Rubber Trading Co. since 1912. Mr. Baird will remain in the service until he receives his commission.



ROBERT L. BAIRD.

William Wadbrook, son of Elston E. Wadbrook, has received from Congressman Ramsey, of the Sixth Congressional District of New Jersey, nomination for the Naval Academy at Annapolis, Maryland, having been successful in the recent open examination, under Civil Service rules, of candidates to fill this vacancy. Mr. Wadbrook attained the very high percentage of 94.80.

Captain Arthur H. Leavitt, a former employe of The B. F. Goodrich Co., Akron, Ohio, whose portrait appeared in our issue of September 1, 1918, was promoted early in October to the rank of major. He is with the Motor Transport Corps and returned from France shortly before receiving his promotion. Due to the recent signing of the armistice with Germany, Major Leavitt is now in Washington awaiting orders, although he had previously expected to return to France early in November.

W. H. Lacey, manager of the Hartford, Connecticut, branch of the Sterling Tire Corp., Rutherford, New Jersey, has been appointed a first lieutenant of the Motor Transport Division and is stationed at Raritan Arsenal, Metuchen, New Jersey, in the Ordnance Department.

William E. Housel, manager of the Rochester, New York, branch of the Sterling Tire Corp., Rutherford, New Jersey, has been appointed by the War Department a first lieutenant of engineers, stationed at Camp Humphreys, Virginia.

Captain Charles E. Speaks, who was formerly manager of motorcycle and, later, of truck-tire sales for the Firestone Tire & Rubber Co., Akron, Ohio, has recently been promoted to the rank of major in the Quartermaster's Department. He has had a long experience in the automobile and rubber-tire trade and will be a valuable man to the Government. Major Speaks is now in France, assisting in the rehabilitation of that devastated country.

Private Harvey Stickles, Headquarters Company, 166th Infantry, in France, for three years an employe of the Goodyear Tire & Rubber Co., Akron, Ohio, is one of the few Americans to receive the Distinguished Service Cross. During a bombardment he successfully repaired telephone lines connecting battalion with regimental posts, sticking to his work when others failed and narrowly escaping injury.

RUBBER MEN RETURNED FROM SERVICE.

Sergeant Walter Bardon, from October, 1914, until recently of the 1st Canadian Field Army, is now an inspector in the vulcanizing department of the Hood Rubber Co., Watertown, Massachusetts. Sergeant Bardon was presented a medal for distinguishing service and honorably discharged as the result of a wound during the battle of Vimy Ridge.

S. A. Morrill, formerly Southern representative of the Davenport Rubber Co., has been given an honorable discharge from the Army and has resumed work with the company. He is now located with the factory and home office in Providence, Rhode Island.



HELPED TO BREAK THE HINDENBURG LINE.

Lieutenant Michael F. Cassidy, formerly with the United States Tire Co., New York City, describes the death of his brother, Lieutenant James H. Cassidy, both being sons of John J. Cassidy, manager of the United States Rubber Co., Detroit branch.

FRANCE, November 9, 1918.

DEAR FATHER:

No doubt long before you receive this, you will have been notified by the War Department of Jim's death. Know you are anxious for the details and will try and give them to you.

Our company went over the top Sunday morning, September 29th, at 5:50 a. m. We were in what is known as the first wave. Met terrible opposition, and had to fight for every inch. I was with Jim all the way until he was hit. We had been going about an hour. He turned to me before he fell, and said: "They've got me; good-bye, Mike." I picked him up and as we were under very heavy machine-gun fire, got him into a German trench, which we had just cleared. He was still alive. I cut his equipment off, and he tried to talk, but could not—died in a minute or two. He suffered absolutely no pain and died in my arms.

I saw all Jim did that terrible morning—he knew no fear. He sure was one brave kid—never hesitated, where some others did.

He was afraid of nothing, and you have the honor of being the father of a hero. We had all been to Mass and Holy Communion the day before we went over, and of course Jim is in heaven now. Thank God he did not suffer a lot, as some of the other boys did.

I was buried shortly afterwards by a shell which burst near me and knocked me cold. It left small pieces of shrapnel in my back and both hands. I was taken to a base hospital and have been transferred here to a convalescent camp, and hope to be all right in a little while. I never can forget the terrible sights I saw that morning, until I was knocked cold, but of all the brave things done, none could touch what Jim did, always in front—he was the first man I saw who crossed the German trenches. Hero is a modest name for him.

Don't worry about me and write when you get a chance.

MIKE.

William Pierce, Jr., who before entering the service was employed in the factory of the National India Rubber Co., Bristol, Rhode Island, is reported missing in action since September 26. He was drafted last May, going to Camp Upton, and a few months later went overseas.

LETTERS FROM THE FRONT

MARTYRS TO THE CAUSE OF LIBERTY.

LIEUTENANT JAMES H. CASSIDY, formerly with the shipping department of the United States Rubber Co., New York City, and son of John J. Cassidy, manager of the United States Rubber Co., Detroit branch, was killed in France September 29. His brother, Lieutenant Michael F. Cassidy, was seriously wounded in the same battle, while breaking the Hindenburg line.

Up to November 14 their father had received no word from the War Department of either casualty. Several newspapers printed a report of the death of Michael at a base hospital subsequent to the date of his last letter to his father. We all trust that this report is in error and that he will soon be home with our other gallant veterans.



LIEUT. JAMES H. CASSIDY.

Three more gold stars have been added to the service flag of The B. F. Goodrich Co., Akron, Ohio. N. W. Pancoast and Thomas Welker, both of whom were formerly employed in Department 50, were killed in action in the Argonne Forest region in France during September. Welker was one of Akron's football stars and Pancoast at one time won the Goodrich baseball championship through his pitching, besides being prominent in basket-ball and other sports. Albert E. Witzler, formerly in Department 41-B, has been reported killed in action also.

The honor roll of The Goodyear Tire & Rubber Co., Akron, Ohio, now has forty-two gold stars, the six last added representing Privates Chauncey W. Barr, Floyd D. Beveridge and Bruce C. Fultz, the last of whom had been in the employ of the Goodyear company for nine years prior to his enlistment, and Privates Earl Custer, Robert Daley and Leslie Pitkin. Custer was killed in the Argonne Forest drive and Pitkin near Sedan.

Frank Martin Backes, a member of the Sanitary Detachment, Medical Corps of the 113th Infantry, has been reported killed in action. Backes was for a long time employed as a tiremaker by the Essex Rubber Co., Trenton, New Jersey.

P. Frankenstein & Sons, Limited, waterproof manufacturers, of Newton Heath, Manchester, has lost its youngest director in the war, Second Lieutenant C. J. Frankenstein, son of Harry Frankenstein, having been killed in action in France.

Carl H. Drechsel, who was employed in the shipping department of the Alice Mill of the Woonsocket Rubber Co. at the time of his enlistment, is reported as missing in action since September 30, although a letter written by a Red Cross nurse dated October 11, states that he had been slightly wounded and was in a base hospital.



LIEUT. MICHAEL F. CASSIDY.

Why the Red Cross Needs Hundreds of Millions.

THE Army and Navy represent the will of the American people; the Red Cross represents the American heart. What the Red Cross has already accomplished in Europe will go down in world history to the everlasting credit of America, but what is being done out of sympathy for suffering humanity becomes insignificant in comparison with what duty calls upon us to perform for our own men and comrades in arms.

The American Red Cross has been a vital factor in winning the war. Its mission is primarily to alleviate suffering and restore health and strength to the sick and wounded at the front, but the present situation is so extraordinary that a great amount

of privation and trench warfare, must be checked to protect our armies. Humanitarian assistance of this character to hearten and strengthen the afflicted peoples of Europe will go far toward establishing law, order and stable government which pave the way for permanent peace.

Public interest in the rehabilitation of men disabled in battle has reached a high point. No longer will the responsibility of the army, the Government, or of industry cease by merely pensioning a man. He must and will be refitted to take perhaps even a higher place in the community than he occupied before his injury. A better education will be provided to offset the physical handicap, and it is the intention of the Government not only to pension every disabled soldier, but to teach him a trade whereby he can support himself adequately—if possible, a trade or employment in which his former experience will count. The Government will not discharge from the Army or Navy any crippled man until he has learned to be self-supporting.

A definite program has not yet been developed, but the Red Cross Institute for Crippled Men in New York City has taken the initiative in experimental vocational training and has demonstrated how the problem can be worked out. Men who have lost their legs are being taught the manufacture of artificial limbs, oxyacetylene welding, motion picture operating, mechanical drafting, printing and jewelry work, while those who have lost an arm are being supplied with new inventions which enable them to engage in a great variety of work.

It is to maintain the foregoing and many other forms of service to our fighting men and to their families through home service that the American Red Cross will conduct a Christmas roll call during the week of December 16 to 23. What finer message could be cabled to our boys on Christmas Eve than that virtually the entire American people have enrolled in the Red Cross. Such a message also would mean a wonderful inspiration to the civilian populations of Europe because it would show that the American people are no less responsive to the needs of their



(C) Committee on Public Information.

THE RED CROSS IN NO MAN'S LAND.

of other civilian relief work, at home as well as abroad, must be undertaken on a scale greater than the world has ever seen. This work presents to the whole people an opportunity and an obligation for sacrifice and service which every patriotic man, woman and child will gladly seize and generously fulfill. The cessation of hostilities will not diminish but rather increase the activities of the Red Cross, whose aid will be of vital moment in the great work of rehabilitation and reconstruction so urgently necessary in all the European countries.

The boys in our Army and Navy, 3,000 miles from home in a country partly devastated and sorely afflicted, must be assured of adequate medical attention and every possible comfort in the hour of need. Not only must doctors, nurses, ambulances, hospitals, medicines and vast quantities of supplies be provided, but a still broader humanitarian service must be undertaken. As long as it is necessary for our armies to remain overseas the Red Cross canteen service must be maintained in hundreds of hospitals, camps, railroad junction points and cities where the men go on leave. In these canteens hot drinks, sandwiches and tobacco are served and opportunities to bathe, sleep, read, play games or chat with the women workers are provided, all of which mean much to our boys and are regarded by army officers as of inestimable value in maintaining the morale of the men. Music and entertainments are also being abundantly provided in order to vanquish those dangerous foes, homesickness and temptation. Unlike the soldiers of England and France, our men cannot return to their firesides during short periods of relief from trench duty, and the Red Cross must often become the foster-parent of their dependent families.

Thousands of towns and villages have been destroyed in the various war zones. Millions of men, women and children are homeless and suffering for the barest necessities of life. They need clothing, agricultural implements, domestic animals, seeds, fertilizers, tools, bedding and stoves, which can be provided with Red Cross funds and distributed through Red Cross agencies. The spread of tuberculosis, now prevalent as a result



THE RED CROSS CANTEN IS A POPULAR SPOT WITH OUR BOYS.

fellow men in peace than in war. All anybody needs to answer to the Red Cross Christmas roll call is a heart and a dollar, but many larger contributions are needed.

The Red Cross is the most deserving charity of the times and merits every material assistance, active cooperation and constructive suggestion that individual or corporate beneficence can devise. Good use can be made of as much money as can be raised.

Activities of the War Service Committee of the Rubber Industry.

REGARDING ESSENTIAL RUBBER GOODS NOT LISTED.

ON October 29, 1918, the following notice was sent out by the War Service Committee.

To all rubber manufacturers:

Under date of October 11 all manufacturers were advised by telegram that the War Industries Board at our suggestion had ruled that pending decisions on application for classification of rubber articles as listed in issue No. 1 of "Regulations Governing the Production of Rubber Products," articles of unquestioned essentiality not listed might be produced to November 1 for current requirements.

The War Industries Board now advises that this ruling has been extended to November 11. After that date regulations published in issue No. 2 will govern production.

These regulations appeared in our issue for November 1, 1918.

REPLACEMENT OF RUBBER ON DIRECT GOVERNMENT CONTRACTS.

The War Service Committee notified all rubber manufacturers on November 4 that when executing the manufacturer's report to the Bureau of Imports, War Trade Board, requesting replacement of rubber used on direct government contracts, the report should state amount in pounds, dry weight, of crude rubber consumed.

W. S. C. QUESTIONNAIRE NO. 25.

At the request of the War Industries Board, the War Service Committee, on November 7, advised manufacturers that the naphtha situation was most serious. The Board had practically decided to limit the production of naphtha to aviation gasoline for government uses only and to motor spirits. No drastic action will be taken, however, until the requirements of the industry are known. To that end W. S. C. Questionnaire No. 25 requests a report from manufacturers on the grade and gallons of naphtha consumed from January 1 to November 1, 1918; estimated consumption for November and December, 1918, and gallons necessary to complete present government contracts. Manufacturers of tires, tire sundries, mechanical goods, footwear, insulated wire, insulating compounds, medicinal and surgical goods, waterproof cloth, waterproof clothing, hand-rubber goods, gas defense products, aircraft material and rubber cement, are requested to give their monthly production of government and other essential work; monthly production of government and other essential work if motor spirit only was available; monthly production of government and other essential work if only 68-70-degree and below was obtainable.

LETTER RELATING TO RUBBER PRODUCTS REGULATIONS.

November 9, 1918.

To the rubber industry:

Acting under the instructions of the War Industries Board the rubber industry is advised that until otherwise instructed they must operate in conformity with Issue No. 2 of "Regulations Governing the Production of Rubber Products," dated November 1, 1918, except that the production of all articles not listed in issue No. 2 and all articles on which rulings have been asked is permitted in such quantities as are required to meet the demands of the current trade.

Any rulings made since the publication of Issue No. 2 are hereby suspended. The requiring of pledges from customers is still held in abeyance in conformity with our letter of October 26.

WAR SERVICE COMMITTEE.

COMMITTEE ADVISES OBSERVANCE OF RESTRICTION RULES.

November 9, 1918.

To the rubber industry:

Acting under the instructions of the War Industries Board, the rubber industry is advised that until otherwise instructed no manufacturer should assume that because of an armistice being

signed the industry will be permitted to operate without restrictions. *This is not so.*

The conditions incident to making peace are such that in all probability a careful control and restriction of imports and consumption of raw materials and production of finished goods must continue for a number of months. Therefore it is important that each manufacturer shall conduct his business with such care as will insure complete cooperation with the War Trade Board, Shipping Board, War Industries Board and all other government departments.

WAR SERVICE COMMITTEE.

W. S. C. QUESTIONNAIRE NO. 25 WITHDRAWN.

NOVEMBER 18, 1918.

To all rubber manufacturers:

The Rubber Section of the War Industries Board has informed us that due to changed conditions, it will not be necessary for manufacturers who have not already answered Questionnaire No. 25 relating to naphtha consumption, to do so.

We wish to impress on manufacturers, however, that it will be necessary for them to answer all of the other questionnaires, and trust that they will send their answers in to us at their earliest convenience.

This is especially important to the rubber industry as these figures may form strong arguments for obtaining relief from present restrictions.

WAR SERVICE COMMITTEE.

REGULATIONS GOVERNING PRODUCTION OF RUBBER ARTICLES WITHDRAWN.

The following telegram dated New York, November 19, 1918, was received on November 20:

The War Industries Board instructs us to announce that all restrictions curtailing production of rubber articles in accordance with Issue No. 2, Regulations Governing Production of Rubber Articles, dated November 1st are withdrawn. This ruling permits the production without restriction of all articles listed in classes two and three; also articles not listed except automobile casings and tubes under six inches, on which we are advised Rubber Section has sent tire manufacturers revised production schedule for the remainder of this quarter.

WAR SERVICE COMMITTEE.

RUBBER SECTION OFFICE NOW IN WASHINGTON.

The Rubber Section of the War Industries Board is now located in the War Industries Annex building, Washington, D. C., to which all communications should be addressed.

ACTIVITIES OF THE RUBBER ASSOCIATION.

SINGAPORE GOVERNMENT PRESCRIBES BALED RUBBER.

THE following letter, dated November 4, 1918, was sent to rubber importers and manufacturers by the Committee on Rubber and Kindred Products:

The following cable has just been received from the Overseas Committee of the Rubber Association of America:

Singapore Government regulations pressing come into force November 15, sheets 220 pounds, crepe 165 pounds, five cubic feet.

From this it will be noted that the Singapore Government has taken the initiative in making the closer form of packing (announcement of which was brought to your attention in our letter of March 23) a compulsory regulation.

We construe the weights mentioned as being the minimum, which after November 15 must be packed in the unit of five cubic feet (the usual size of a rubber package).

ANNUAL MEETING AND BANQUET.

The nineteenth annual meeting and banquet of The Rubber Association of America, Inc., will be held January 20, 1919, at the Waldorf-Astoria, New York City.

This will probably be one of the most important meetings ever known in the history of the trade, and a large attendance is confidently expected.



BERTRAM G. WORK
CENTRAL COMMITTEE

Chairmen of the War Service Committee of the Rubber Industry.



P. W. LIVCHFIELD
AIRCRAFT DIVISION



E. S. WILLIAMS
MECHANICAL GOODS
DIVISION



CHARLES T. WILSON
CRUDE RUBBER AND KINDRED PRODUCTS DIVISION



FRANCIS H. APPLETON
RECLAIMED RUBBER DIVISION



J. W. THOMAS
SOLID TIRE DIVISION



G. M. STADELMAN
PNEUMATIC TIRE DIVISION



GEORGE H. MAYO
BOOT AND SHOE DIVISION



DR. W. C. GEER
GAS DEFENSE DIVISION



N. LINCOLN GREENE
CLOTHING DIVISION



E. H. HUNLEY
FOREIGN TRADE DIVISION



W. S. CLARK
INSULATED WIRE AND
CABLE DIVISION



H. WEIDA
HARD RUBBER DIVISION



A. W. WARREN
MEDICAL RUBBER GOODS AND SUNDRIES DIVISION

Portrait of H. E. Raymond, Chairman of the Railway Supplies Division, is not available.

CONSERVATION OF TRANSPORTATION.

In a letter dated November 9, the Traffic Committee directed attention of firm members to the following bulletin issued by the chairman of the War Industries Board and relating to the conservation of transportation facilities:

To all merchants and manufacturers in the United States:

Under present conditions it is obvious that the transportation facilities of the country must be conserved in every practical way in order that the movement of troops, supplies, munitions and shipbuilding materials may be unhampered. The situation demands that all needless and wasteful use of shipping space be eliminated.

It appears that one of the burdens which can and should be removed is the unnecessary return of merchandise from merchants to wholesalers and manufacturers. This double transportation of goods to and from the purchaser meets no essential need but results in waste. To remedy this situation, therefore, retailers, wholesalers and manufacturers in every industry and trade are earnestly requested to cooperate with each other for the elimination of all unjustifiable returns of merchandise.

This request is not intended to interfere with the return of merchandise when there has been an error on the part of the seller as to price, style or quality, misinterpretation of order, unauthorized substitution, or when merchandise is inferior or not up to sample. When goods are delivered "as bought," however, they should not be returned to the seller. If merchandise is to be returned because of substitution or error of any kind, notice should be given by the purchaser, within ten days after the receipt of the goods, that return is intended. Ample time should, of course, be allowed for explanation or proffered adjustment.

Salesmen should make "definite" sales only. In their travels, furthermore, they can be of particular assistance by enlisting the cooperation of their customers for careful selection and purchase of merchandise so that returns will be unnecessary.

Whole-hearted compliance with this request in the spirit of husbanding our resources and eliminating waste of transportation, materials and labor will be a substantial contribution by the merchants and manufacturers of the country to our general welfare and the success of the war program.

CONSERVATION DIVISION, WAR INDUSTRIES BOARD.

INCREASE IN TONNAGE OF RUBBER LICENSED.

The Committee on Rubber and Kindred Products sent the following letter, dated November 21, to rubber importers and manufacturers:

The amount of rubber that may be licensed for the present quarter of October-December has been increased from 25,000 tons to 32,500 tons, as per advice received from the War Trade Board, copy of which follows:

November 20, 1918.

Rubber Association of America, Inc.:

Supplementing our letter dated September 23, the quantity of rubber for which import licenses may be issued by the War Trade Board during the October-December period has been increased from 25,000 to 32,500 tons. The additional 7,500 tons will be allotted to manufacturers in Class B, under subdivisions 1, 2 and 3 on basis of an amount equal to 75 per cent of their previous allocation for this period; and to manufacturers in Class C, on basis of an amount equal to 33 1/3 per cent of their previous allocation for this period; but only to manufacturers in either class who have furnished information as to production and consumption called for in questionnaires to date and who have conformed to regulations governing production since August 1, 1918, as announced by War Trade and War Industries Boards.

Provision will also be made for allocation to manufacturers who were not in production previous to August 1, 1918, and they will receive allocation to conform with production as authorized by the War Industries Board.

This additional allocation to be granted may be used for importation of crude rubber from any source.

WAR TRADE BOARD.

The Bureau of Imports advise they will issue allotments in accordance to manufacturers, for this additional 7,500 tons, which may be used for the importation of crude rubber from any source.

We are directed also to remind importers and manufacturers of the statement in letter of September 23 to the effect that

manufacturers must utilize the full amount of their allocations before any allotment will be made them in succeeding periods.

(Editor's Note:—Details of crude rubber allocation for the October-December period were published on pages 13-14, in THE INDIA RUBBER WORLD, October 1, 1918.)

CLOTHING DIVISION MEETING.

The Clothing Division of the War Service Committee of the Rubber Industry held a meeting at the Yale Club, New York City, November 20, at which all the manufacturers in that division were represented. N. Lincoln Greene, the chairman of the committee, presided.

The meeting was held to consider the future of the organization, as the War Industries Board, of which this body was a part, would cease with the termination of the war. As explained by George B. Hodgman, of the Central Committee, a convention of the rubber trade will probably be held in New York City about the middle of December, at which it would be decided to continue permanently, following the plans already started by each committee, even though the Central Committee and the War Service Committee were dissolved.

It was therefore voted that a committee be appointed to make recommendations as to the advisability of forming a permanent organization, the chairman appointing thereon S. T. Hodgman, of the Hodgman Rubber Co., and W. H. Yule, of The B. F. Goodrich Rubber Co.

It was voted to continue the Manufacturers' Chart of Calendered Rubber Clothing, with some revisions made that day, up to and including June 1, 1919, with the understanding that a meeting be held 30 days prior to that date, for a readjustment, if necessary. All restrictions on double and single texture rubberized clothing was removed, but each manufacturer is to make special effort, along the lines of conservation, to restrict styles as much as possible. No restrictions, however, are to be enforced on styles in either class for export.

It was decided that the committee as a whole should apply for membership in and reorganize under The Rubber Association of America.

CRUDE RUBBER STOCKS OF SEPTEMBER 30, 1918.

The following letter was sent to the rubber trade on November 19:

By direction of the War Trade Board, statistics of crude rubber stocks as of September 30, 1918, were collected from the rubber trade in the United States by The Rubber Association of America, as per the questionnaire sent out at the time to both importers and manufacturers. We are now authorized by the War Trade Board to make these figures public.

Manufacturers reported the following tonnage on hand September 30, 1918:

	In Stock.	In Transit	Alloct.	Totals.
Crude rubber	34,934.0	15,301.7	1,420.5	51,656.2
Jelutong	1,056.8	54.6	.....	2,011.4
Gutta percha	36.0	16.5	.....	46.5
Balata	191.6	16.8	.....	308.4
Gutta siak	758.2	52.2	.....	810.4
Totals	37,876.6	15,435.8	1,420.5	54,732.9

Importers reported the following tonnage on hand September 30, 1918:

	In Stock.	In Transit	Alloct.	Totals.
Crude rubber	7,425.2	5,487.8	8,993.6	21,896.6
Jelutong	256.0	144.0	.....	400.0
Gutta percha	5.1	.....	164.0	169.1
Balata	109.0	4.5	13.9	127.4
Gutta siak	31.5	21.0	.....	52.5
Totals	7,826.8	5,657.3	9,211.5	22,695.6

The total tonnage for both manufacturers and importers is as follows:

	In Stores and In Stock	In Transit and Alloct.	Totals.
Crude rubber	42,359.2	31,193.6	73,552.8
Jelutong	2,312.8	198.6	2,511.4
Gutta percha	41.1	174.5	215.6
Balata	300.6	35.2	335.8
Gutta siak	789.7	73.2	862.9
Totals	45,703.4	31,675.1	77,378.5

Broad American Maritime Policy Needed.

With its principal raw material coming from the tropics overseas in ships, and an increasing amount of its manufactured product being exported to foreign lands, the rubber industry, the fifth largest in America, realizes that the development of a broad and sound American maritime policy is of prime importance to the national welfare. Its interest in the fifth annual meeting of the National Foreign Trade Council, held at the Biltmore Hotel, New York City, November 8, requires no further explanation.

The National Foreign Trade Council is made up of representatives of every factor of foreign trade, industrial, agricultural, commercial, financial and transport. It represents every section of the country, and among those present at the annual meeting were men from the Pacific Coast, the South, the Middle West, and New England, as well as from New York City, the rubber industry being represented by E. H. Huxley, president of the United States Rubber Export Co.

A declaration against an economic warfare after the war, and a strong pronouncement in favor of the adoption of a national maritime policy that will permit the permanent retention and operation of the newly constructed American merchant fleet under the American flag were the distinguishing features of this meeting.

The chairman of the council is James A. Farrell, president of the United States Steel Corp. In his address presenting the report of the committee on merchant marine, of which P. A. S. Franklin, Robert Dollar and himself were the members, he discussed some of the problems facing this country as a result of the war and of the restoration of peace.

NO ECONOMIC WARFARE.

"The progress of the war," he said, "has been marked by much discussion of proposals for and conditions of a continuation of the contest by economic forces after the military struggle is ended. Our supreme duty is to see to it that the peace terms render impossible the continuance of conditions sought to be corrected or prevented by economic warfare. If the peace is satisfactory, there will be no need for economic warfare. If the peace is not satisfactory, economic warfare will be possible. It is for us then rather to devote our fullest effort now to insuring the enforcement of an adequate, just, and final peace. With such a peace we can go forward in confidence to meet and solve the numerous and intricate problems certain to arise from the complex and novel conditions naturally flowing from the cataclysm that has overwhelmed the world during these last four years."

NEW COMMERCIAL TREATIES.

Mr. Farrell referred to the importance of the negotiation of new commercial treaties which will be necessary promptly after the conclusion of peace, and declared that the first problem of reconstruction will be that of the merchant marine. He emphasized the importance of arriving promptly at an effective solution of this problem.

"We are building the ships," he said, "which will be the most effective agency in the permanent solution of the great after-war problem; always provided, however, that our nation adopts a definite maritime policy which will permit the permanent retention and operation of these vessels under the American Flag."

CONSTRUCTION PROGRAM SHOULD CONTINUE.

The report emphasized the importance of continuing the present accelerated construction program of the Shipping Board for a considerable time after the war in order to complete cargo and passenger-carrying ships aggregating about 14,000,000 gross

tons, which will not only restore the world's tonnage losses, but amply meet the needs of American foreign trade.

Discussing the essential factors in the furnishing and operation of ships—the cost of capital, the cost of construction and the cost of operation—the committee concluded that so far as costs of capital and of construction are concerned, the United States will not be disadvantageously situated after the war compared with other maritime nations.

COMPETENT CREWS ESSENTIAL.

The report then says:

"No one contends or believes that it is not desirable to have American vessels fully manned by competent crews and to have American seamen enjoy the best possible conditions of life and service, and receive in wages due and ample return for their labor. But it is perfectly obvious that provision of law which requires American vessels to maintain larger crews, and to pay them higher wages than is the case with foreign vessels, necessarily subject such American vessels to a disadvantage which renders it difficult if not impossible for them to continue in operation against the competition of foreign vessels which can operate at lesser cost."

DEFINITE MARITIME POLICY NEEDED.

Summing up the whole matter, the committee says, "The United States, then, will emerge from the war with a large merchant fleet and with the facilities for its renewal and expansion, but unless positive steps are taken in the very near future toward the formulation and adoption of a sound national maritime policy, it may be set down as absolutely certain that these newly constructed American vessels will not remain in operation under the American Flag and that the American merchant marine, rehabilitated with vast expenditure of capital and effort as a war emergency measure, will again be dissipated under the operation of inexorable economic laws.

PROFITABLE OPERATION MUST BE ASSURED.

"We cheer the acquisition of the new fleet and we applaud the energy of the Shipping Board and the tireless industry of the thousands of workmen in the mills and shipyards who have brought it into being; but our cheers will be idle and our enthusiasm and energy will have been wasted unless before the day arrives for the renewal of competition that is bound to follow the restoration of peace, we have formulated and adopted a policy based upon honest recognition of fundamental economic principles, which will enable us to meet that competition with our new American ships, under the American Flag, with honor and with profit to ourselves and without injustice or unfairness to our competitors. It is most important that the American should face his competitors under equal conditions. All that is needed is a fair field and no favor. As an incident of the international agreement and settlements soon to be worked out, the maritime nations should agree upon uniform regulations which will impose equal conditions and requirements upon all alike. Such an arrangement would insure that equality which will give every one a fair chance."

INTERNATIONAL AGREEMENT SOUGHT BY HURLEY.

It is understood that Edward N. Hurley, chairman of the Shipping Board, who sailed for Europe November 16, plans to seek an international agreement between the governments, shipping interests and labor organizations of the principal maritime powers for standardization of seamen's wages and working conditions. He will probably propose that the American laws and the agreements between the governments and the seamen's unions on these subjects be accepted as the standards and include that

the American Federation of Labor and the British Seamen's Union are prepared to support the proposal.

BRITISH vs. UNITED STATES SHIPPING.

Although there is no immediate prospect of a resumption of normal shipping activity great interest is being manifested in the coming competition for control of the world's carrying trade, an interest which has been considerably heightened by the sudden termination of the fighting. Great Britain and the United States are regarded as the chief competitors, but Great Britain has the advantage in the amount of tonnage owned, the trained men and experience, and the fact that she will be able to resume much of her pre-war shipping before the United States will be in a position to enter the field on a large scale.

American initiative will offset these disadvantages to a considerable degree, but the great handicap lies in bringing back our great armies overseas. The burden of feeding Europe, will, of course, fall heavily on both the British and American merchant marines, but the task of transporting returning troops and of supplying those that remain abroad is greater in the case of the United States. The expectation is that the transatlantic liners under the British flag may be called upon to perform the dual service of transporting food to England and bringing American troops home. But in the main, it is agreed that the American army will be brought over in American bottoms, many cargo vessels being converted for this purpose.

Chairman Hurley of the Shipping Board says: "Only a limited portion of the shipping which can be constructed by us in 1919 will be available for use in ordinary commercial channels." In contrast to this is the statement by the agent here of a British company operating a New York-South American service: "We are looking forward to the gradual return of our tonnage and we hope it will be soon."

Another point of the greatest importance is that Great Britain has definitely announced a policy of "hands off" as soon as conditions will permit, while the United States has so far not indicated its intentions further than that the Emergency Fleet Corporation will carry its shipbuilding program to completion. Bonar Law, Chancellor of the British Exchequer, has declared that the British government does not contemplate nationalization of shipping after the war and some government ships have already been offered for sale to private interests.

The British shipowner, it is felt, can look forward with greater confidence to the future. He will be first in the field and may easily gain a long lead. The United States must plan very carefully if this is to be prevented. Certainly, the day when restrictions on British shipping are removed, the bars must be let down by America also.

CONVENTION OF AMERICAN MANUFACTURERS' EXPORT ASSOCIATION.

The ninth annual convention of the American Manufacturers' Export Association was held at the Waldorf-Astoria Hotel, New York City, on October 30 and 31, hundreds of delegates taking part in the proceedings. Among the members of the board of directors are the following: F. A. Seiberling, the Goodyear Tire & Rubber Co.; F. A. Taylor, S. S. White Dental Manufacturing Co.; E. M. Herr, Westinghouse Electric & Manufacturing Co. Rubber companies were to the fore at the convention. D. L. Brown, export advertising department, the Goodyear Tire & Rubber Co., Akron, Ohio, spoke on foreign advertising; Frank H. Taylor, president, S. S. White Dental Manufacturing Co., Philadelphia, dealt with the subject of the new type of foreign representative; J. F. Foyler, W. R. Grace & Co., New York City, read a paper on the export merchant; C. J. Warren, export manager, H. W. Johns-Manville Co., New York City, presided at the session at which sales organization abroad was discussed; F. B. Whitney, of the committee on commercial treaties and trade

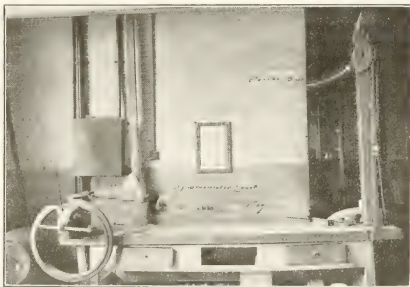
marks, reviewed the history and present position of the treaty situation in a comprehensive manner; and M. A. Oudin, foreign manager, General Electric Co., Schenectady, New York, outlined what is needed in the development of foreign trade service.

THE GOVERNMENT'S PNEUMATIC TIRE TESTS.

Commencing December 1, the Government will purchase pneumatic tires on a specification basis. Space not being available for the work at the rubber laboratory of the Bureau of Standards, Washington, D. C., part of the laboratory at the University of Akron, Akron, Ohio, will be used for the chemical analyses necessary on specification work for all tires manufactured in the Akron district and west of Akron. The remainder will go to the Bureau of Standards, Washington, D. C. The necessary physical tests on the tires will be made by inspectors at the various plants and will be checked by results obtained in the physical rubber laboratory of the Bureau in Washington. The Akron branch will be in charge of S. W. Epstein, while Arnold H. Smith will direct the work at Washington. A photograph and personal sketch of Mr. Smith appeared in THE INDIA RUBBER WORLD May 1, 1918.

BARBECUE TEST ON SOLID TIRES.

The so-called barbecue test was devised to measure the adhesion between the tread rubber, and the hard-rubber layer of a solid truck tire. It formerly was required by the specifications for solid tires to be furnished to the United States Government. The details of the test are given below although recently it has



THE BARBECUE TEST ON A SOLID TIRE.

been discontinued by authority in government inspection. The equipment consists of a strong bench upon which is mounted a heavy vise. At the end of the bench opposite the vise is mounted a 1½-ton triplex chain-block. A 2,500-pound Chatillon dynamometer is used to register the pull. The tire is prepared for test by cutting the rubber back along the top of the tire channel far enough to permit a secure rope tie. The dynamometer is interposed in the line of pull between tire and chain-block, as shown in the illustration, and registers the strain required to separate the soft rubber from the hard.

BRAIDED CABLES FOR THE TROPICS.

British cable manufacturers who make cables with white, red and black braiding state that the first is chiefly for export to the tropics. It seems that for some reason, which has hitherto found no satisfactory explanation, rubber with white, or even black braiding, is less liable to deterioration in tropical climates than with red. Thus in India, practically no red braided cables are used.

rings was enclosed in a bridge on either side of the axle, but these were found cumbersome and heavy and presented too much parasite head resistance. Then came one of lighter rubber-cord construction that gives very good results; however, it is evident that the shock absorber is still in its infancy and opportunities for improvement are abundant. The life of the rubber cord, which is composed of many small strands of rubber covered by a braided cotton cover, is governed by the life of the cotton. When the covering breaks, the efficiency of the cord is at an end. The greatest reason why the rubber cord is used is because of the peculiar hysteresis curve that it gives. It has, moreover, great ability for absorbing shock in landing and taxing across a field. The old type of rubber ring has very little hysteresis except when the stock is of such a nature that it cannot come back, and consequently takes permanent set. Obviously, a unit of rubber that elongates when a load is applied, and returns promptly to its original length when the load is released, affords little shock-absorbing ability, because its action is equal in both directions. A new type of shock absorber recently developed is made of rubber with all the advantages of the cord, but with none of its disadvantages. In order to prolong the life of the rubber cord or rubber shock absorber in some of the lighter fighting planes, a protecting collar of rubber has been made to be inserted in such a way that the pinching action of the metal portion of the spool and bed is eliminated, so that the cord is free from punishment and its efficiency is impaired only by its own action.

RUBBER WASHERS, STRIPS AND COLLARS.

Because of the continuous vibration of airplanes, petrol tanks and all delicate parts are guarded to some extent with rubber, either in washer or strip form. Special designs of oil strips have been made for use in the head cowl of the rotary motors. These prevent the oil from spraying the face of the pilot and not only add greatly to his comfort, but to his safety as well. Then, too, there are rubber radiator collars, used when the shaft of the motor with the propeller fastened on the end protrudes through the radiator. This rubber protects the delicate portion of the housing so that it will not be cut through by the harsher member under constant vibration.

TANK COVERS, MATTING AND TUBING.

Interesting tests have also been made on a gasoline tank cover so constructed that the inner stock of the cover kept under pressure, and when penetrated by bullets the holes are immediately closed, thereby retaining the fuel and permitting the aviator to reach his own line with safety. Rubber matting is being used, principally the pyramid type, in place of aluminum. These molded pieces of matting are used on the pedal bar, for foot control in the foot-holes and on the floors of the large bombers.

Tubing as well as hose is essential. Light tubing is used for conveying gasoline and oil under low pressure, and acid tubing is also required. There are also numerous pieces of rubber tubing that are compounded to endure long periods of oxidation. These are placed in the pipe lines at critical points where metal tubing cannot be used to advantage.

OXYGEN HELMET.

The pilots at some of the aviation fields have recently become interested in rubber clothing providing warmth for themselves while in flight. A most important equipment of an army aviator is the oxygen mask for high altitudes. Without this helmet the cruising radius of a pilot would be confined to what his own physique would stand, but with the helmet, the cruising radius is only limited by the capacity of the machine which he flies. The apparatus consists of a helmet, similar to the present gas helmet used by the Army, with the exception that pure oxygen is breathed instead of air passing through purifying substances.

Formerly aircraft engineers were skeptical about the mechanical efficiency of rubber, but during the past year such developments have taken place that they are beginning to recognize the

advantages of the use of rubber and are awaiting with interest the introduction of other rubber parts and the refinement of those now in use.

UNITED STATES ARMY SPECIFICATIONS FOR RUBBER BLANKETS.

MATERIALS.

THE body of the blanket to be of gray sheeting, best quality, at least 36 inches wide, weighing not less than three and ninety one-hundredths (3-90/100) ounces to the linear yard, 35 inches wide; counting not fewer than 56 threads and not more than 66 threads to the inch in both warp and filling, and having a tensile strength of not less than 56 pounds to the inch in the width in both warp and filling.

Blankets to be thoroughly and uniformly coated with a high-grade black rubber compound containing not less than 75 per cent (by volume) best grade fine Para or plantation *Hevea* rubber, the sulphur content not to exceed 5 per cent by weight of the total rubber content. The surface rubber to be calendared and not spread upon sheeting. Each blanket to be vulcanized after being manufactured.

SIZE AND DESCRIPTION.

To be 83½ inches long and 71½ inches wide, all four edges to be turned in with a 1¼-inch hem, securely cemented, making the complete blanket 80 inches by 68 inches. Where edges of material are joined to form proper width, the joined edges must be turned under and securely cemented as in the standard, the tensile strength of the joint to be at least 40 pounds per inch of width. Blanket to have one No. 3 brass grommet in each corner, four on each end, and five on each side, one inch from edge of blanket, placed equal distances apart, about 13 inches, as shown in standard sample. Completed blanket to weigh not more than 6 pounds 4 ounces and not less than 5 pounds 12 ounces.

MARKING.

Each blanket to be stamped or stenciled on under surface with the following, fast-color black ink being used: near center: "Med. Dept. U. S. A." (one-inch black letters); in one corner: (name and location of contractor and date of contract).

FOLDING AND PACKING.

Five blankets will be folded to form a bundle about 15 by 36 inches. Seven of these bundles (35 blankets) will be packed in boxes strongly made of ¾-inch (finished) material, strapped for export shipment (specifications for export packing boxes furnished on request). Each box to be marked on its end with the contents, name of contractor and date of the contract.

WORKMANSHIP AND FINISH.

Workmanship and finish of blankets to be first-class in every respect, equal to and like standard sample at Field Medical Supply Depot, United States Army, 21 M street, Northeast, Washington, D. C.

WASTE RECLAMATION COUNCIL MEETING.

A meeting of the Waste Reclamation Council was held Thursday, November 21, at Washington, D. C., when the importance of waste materials during the war and in the after-war program was discussed.

Among the speakers were former President William H. Taft and Hugh Frayne, chairman of the Labor Division of the War Industries Board. Louis Birkenstein, Chief of Salvage of the Department of Reclamation and Conservation of the War Department, who represented the National Association of Waste Material Dealers, pledged the association's cooperation in carrying out the Government's plan for collecting and marketing waste materials.

"Rubber Machinery," by Henry C. Pearson, is filled with valuable information for rubber manufacturers. Price, \$6.

U. S. NAVY DEPARTMENT SPECIFICATIONS FOR INSPECTION OF RUBBER MATERIAL.

GENERAL SPECIFICATIONS.

1. "General Specifications for Inspection of Material," issued by the Navy Department, in effect at date of opening of bids, shall form part of these specifications.

TEMPERATURE OF TESTING ROOM.

2. All tests of the rubber parts shall be made in a room, the temperature of which is not below 65 degrees F., nor above 90 degrees F. No tests shall be made until 48 hours after vulcanization.

APPARATUS FOR TESTS.

3. A standard testing table suitable for the purpose shall be used.

TESTS OF ADHESION OF RUBBER PARTS TO COTTON OR FABRIC PARTS.

PREPARATION OF TEST PIECE.

4. In making the test, a section of the article shall be cut as follows:

(a) In testing hose the section shall be cut transversely, unless the diameter of the hose is too small to be practical for this test, in which case it shall be cut longitudinally.

(b) When testing belting, packing, or gasket material, it may be cut in any direction.

(c) When testing rubber-lined cotton hose the test piece shall be prepared by cutting directly through the section, so as to lay out upon the table a piece measuring the full length of the circumference of the hose and 2 inches in width. On this piece two parallel cuts $\frac{1}{2}$ inches apart shall be made by cutting through the lining only and not injuring the cotton cover. This strip shall be started at one end to the extent of about $\frac{1}{4}$ inches. The cotton cover only shall be fastened in the clamps.

(d) When testing a fabric-plied hose the section shall be one inch in width. The piece shall be separated until the part next to the rubber cover shall be loosened. The section shall then be placed on a mandrel whose diameter is the same as that of the inside of the hose to be tested.

(e) When testing packing the piece shall be prepared as in the case of rubber-lined cotton hose, unless the thickness of rubber is greater than $\frac{1}{8}$ inch, in which case the piece shall be prepared in such a way that the rubber part may be clamped at the top and held immovable while the weight, as described below, is clamped to the fabric.

(f) When testing belting the test strip shall consist of two plies of fabric only, one ply being held in the stationary grip, with weight suspended freely from the other ply.

(g) Square Tuck's packing shall be tested in the same manner as is specified for testing the friction between the plies of a belt.

(h) The friction in round Tuck's packing shall be tested by the same method as is used in fabric-plied hose, the core being drilled out to permit the insertion of a mandrel. Whenever the core is $\frac{3}{16}$ inch or less in diameter it shall be tested in its original shape. When it is over $\frac{3}{16}$ inch in diameter a piece six inches long shall be separated from the fabric and cut and buffed on four opposite sides to form a square section $\frac{1}{8}$ by $\frac{1}{8}$ inch in the center of the test piece. The $\frac{1}{8}$ -inch square shall be at least one inch in length.

(i) In testing the friction of belting the load should be applied at right angles to the plane of separation, or the test strip should consist of only two plies of fabric, one ply being held in the stationary grip with the weight suspended freely from the other ply. By this means the effect of the thickness of the belt may be eliminated.

PERFORMANCE OF TESTS.

5. Having thus fastened the test piece, the clamp ring shall be slipped upon the mandrel, or, in the case of fabric-plied hose,

the test piece shall be slipped upon the mandrel. The free-moving clamp shall be tightly fastened to the free end and the weight supported upon a movable table hooked over the hook in the clamp. The weight and the clamp together shall be exactly equal to the weight called for in the specifications.

The weight then supported by the movable table of the testing machine shall be lowered until the clamp and free end of the hose are just taut. An indelible pencil mark shall be placed upon the separating layers of the test piece, and by quickly loosening the thumb screw supporting the table it shall be allowed to fall, leaving the weight freely suspended. In every case this shall be done without a jerk. The time shall be read at the moment of freeing the weight and at the moment of re-marking. The weight shall be allowed to act upon the test piece for ten minutes, at the end of which time an indelible pencil mark shall be placed again upon the separating layers of the test piece. The movable table shall then be brought up to hold the weight, the test piece removed and laid upon the table, and the distance between the pencil marks shall be measured by means of a certified rule accurately graduated in decimals of an inch. The distance between the marks shall be recorded as the number of inches of separation in ten minutes, from which shall be computed the rate in inches per minute.

TESTS OF RUBBER PARTS.

PREPARATION OF TEST PIECE.

6. (a) For hose, a section one inch in width shall be cut. For belting, packing, and sheet gaskets a piece one inch in width and six inches in length shall be cut in any direction. The rubber parts shall be carefully separated from the fabric of this piece, using benzine in small amount if necessary. The benzine used in this case shall always be 76 degrees Baumé, free from oil.

(b) In case of articles to be tested, such as washers, ferules, and molded gaskets, which are of such peculiar shape that the above methods do not apply, small sample pieces shall be sent with each delivery. These sample pieces shall be eight inches in length, $\frac{1}{2}$ inches in width, and $\frac{1}{8}$ inch in thickness, unless otherwise specified. These sample pieces shall be guaranteed by the manufacturer to represent truly the average composition and cure of the article delivered. Test pieces shall be cut from these samples as described below.

(c) From these one-inch sections, or from sample pieces thus prepared, a test piece shall be cut by a die. The dimensions of the test piece shall be indicated in each specification. It is the intention to have the cross-section area at the constricted part approximately $\frac{1}{32}$ square inch. The backing or cloth impression shall be removed from the test piece by buffing for determining the cross-section area. The test specimen shall be buffed on a machine such as is made by the Emerson Machine Co., of Boston, or its equivalent.

(d) No test shall be performed until the piece has been allowed to stand for one hour after removal from the article, if it has in any way been in contact with benzine.

TESTING MACHINE.

7. (a) The jaws shall tighten automatically and exert a pressure proportionate to the applied tension. The rate of speed of separation of the jaws shall be uniformly 20 inches per minute. The jaw shall exert a uniform pressure across the width of the test piece, regardless of any variation in the thickness of the rubber.

(b) The test machine shall be suitable to carry out the necessary tests, and shall be standardized in accordance with the latest approved designs so far as practicable.

MAKING THE MEASUREMENTS.

8. (a) TAKING OF TIME.—All measurements of time shall be taken by means of a stop watch. The fundamental methods of testing are so made throughout the entire rubber specifications that the following procedure shall be uniform: After

placing any test piece in the machine ready for stretching, the piece shall be drawn just taut and the stop watch started at the instant of the beginning of the stretch. The piece shall then be held for ten minutes at a specified distance, and the time shall be again noted at the moment the piece is released. This moment is simultaneously the beginning of the period of rest. The measurement is then to be taken at the instant of expiration of the second 10 minutes.

(2) MEASUREMENT OF ELONGATION.—Marks two inches apart shall be placed on the test piece by means of a marker. These marks shall be at right angles to the direction of pull of the piece in the machine. Great care shall be taken: (1) That the marks are not too wide, and (2) that at the time of marking, the piece shall have been lying for a sufficiently long time to be completely at rest on a wooden table which has been at the temperature of the room mentioned in paragraph 2 herein. The marks shall be placed on the smooth side; that is, in no case on the side which is corrugated, due to its impression taken from the fabric.

After clamping the test piece in the jaws of the machine the movable jaw shall be so adjusted with the pointer reading zero on the scale that the test piece is just taut, but not under tension. The operator shall throw on the power to start the screw and, when ready, throw in the engaging lever to start the jaws. He shall keep the elongation scale pointers opposite the outside edges of the marks on the piece. To stop the motion at the desired elongation or upon the break of the piece, the jaws shall be disengaged from the screw.

The accuracy with which the elongation measurements are made will depend upon the accuracy with which the operator keeps the two pointers opposite the outside edge of the marks on the test piece.

The elongation shall be reported in inches, including the original two inches; that is, if the rupture occurs at eleven inches, or twelve inches, or thirteen inches, it will indicate that the stretch has been two to eleven, two to twelve, or two to thirteen. The piece shall be removed from the machine, but not snapped back; in no case shall the time consumed in removal from the machine exceed two seconds.

(c) MEASUREMENT OF PERMANENT SET.—After the piece has been removed from the machine the permanent elongation or recovery shall be measured by laying it upon a wooden table which is of the temperature of the room, and allowing it to rest for ten minutes. Immediately upon the expiration of the ten minutes a rule graduated to 1/32 inch shall be laid upon the piece and the elongation read in 1/32 of an inch, measuring the outside of the marks.

The per cent of elongation of the test piece above the original two inches shall represent its permanent elongation.

Tests for the determination of permanent set will be made upon a machine similar in principle to the one illustrated on the last page of these specifications.

TENSILE STRENGTH.

9. (a) The tensile strength shall be determined by stretching a test piece not previously tested in the tensile machine until it breaks. If the test piece breaks outside the marks, or in the wider portions of the piece, and the tensile strength is much below that called for in the specifications, it is probable that this piece is faulty and that another would meet the requirements. If the piece breaks outside the marks and yet shows a tensile strength above that called for in the specifications, it is probable that the piece is faulty and that its true tensile strength is higher than indicated. Since its recorded tensile strength exceeds that called for in the specifications, however, it shall not be necessary to retest.

Before any tests are made, the width of the test piece shall be determined at three points equidistant between the marks. The backing or irregularities of fabric impression shall be stripped

or buffed off and the thickness measured with the backing removed. It shall be determined at three points equidistant between the marks on the test piece, by means of a standard spring-gage micrometer (exerting a pressure of eight to twelve ounces), the disks of which are 1/2 inch in diameter. The measurements used in the computation of tensile strength shall be those read nearest the point of break. The disk of the micrometer shall be 1/2 inch in diameter when measuring thickness of the tube of all hose which has an inside diameter of one inch or under.

(b) INITIAL STRESS.—During the elongation and recovery test the initial stress shall be taken by connecting a spring balance with the piece under test. The number of pounds read on the balance at the maximum stretch shall then be computed in pounds per square inch and expressed as "initial stress."

PRESSURE TESTS.

10. (a) The hose shall be stretched out for inspection, connected to the pump, and filled with water, leaving the air cock open to allow the air to escape. The air cock shall then be closed and a pressure of ten pounds per square inch applied. The test shall then begin by taking original measurements without releasing the pressure.

(b) All pressure tests shall be made by using a hand or power water pump, and a standardized gage. The increase in pressure shall be made at the rate of 300 pounds per minute, and the hose under test shall be held for measurement not more than two minutes, unless otherwise called for in the specifications.

COMPOSITION.

11. (a) FRICTION.—Wherever, in the detail specifications, friction is mentioned it shall be made from a compound which will neither yield to acetone, any organic constituent foreign to *Hevea* rubbers, nor contain more sulphur than is necessary for vulcanizing, so that the percentage of sulphur in the rubber layers shall not be raised beyond the permissible amount.

(b) MATERIAL.—The (article) shall be properly vulcanized and shall be made from and shall have all the characteristics of a compound containing not less than per cent of washed and dried fine Para rubber, not more than per cent of sulphur, with the remainder suitable dry inorganic mineral fillers. The mineral fillers may contain barytes, but shall be practically free from sulphur in other forms and from any substance likely to have a deleterious effect on the rubber compound. The sulphur in barytes will not be included in the allowable sulphur content.

(c) SAMPLE FOR CHEMICAL ANALYSIS.—A sample taken for chemical analysis shall be sent intact to the laboratory for tests.

AVERAGE READING.

12. Since the physical properties of rubber vary noticeably in any given product, it may occasionally happen that tests are made upon a sample which will be of poor quality. The hose, belting, or packing will, as a whole, meet the requirements of the standard, but the particular piece taken may fall somewhat below it. To reject or accept a lot of hose because of its failure to meet one test under specifications would therefore be unfair. For this reason acceptance or rejection of an item offered for delivery shall be based on the average of at least four determinations for each quantity. In arriving at these averages no weight shall be given to tests which are obviously in error and do not represent true average conditions, e. g., cases in which the tensile strength is low on account of a small flaw in the article or the friction is low on account of a small flaw in the friction part. In other words, the intent of the specifications is to insure a high-grade article in every particular, and the intent of the methods of testing is to determine whether the article as a whole is of this high standard.

Deliveries of hose, packing, etc., which regularly meet certain provisions of the specifications, but quite as regularly fail to

meet others, are obviously improperly made and should be rejected.

REJECTIONS AND REPLACEMENTS.

13. All rubber materials shall be inspected and tested, so far as practicable, at the point of manufacture.

REPUBLIC RUBBER CORP. INCREASES CAPITAL.

The certificate of incorporation of The Republic Rubber Corp. has been amended to provide for—first, a preferred seven per cent cumulative stock consisting of 100,000 shares, par value \$10,000,000; second, 25,000 shares of second preferred eight per cent cumulative convertible stock, par value \$2,500,000; third, 650,000 shares of common stock without nominal or par value, being an increase of 400,000 shares over the present authorized common stock. The directors of the company have decided to offer 20,000 shares of the second preferred stock, par value \$2,000,000, and 100,000 shares of common stock without nominal or par value, to the common stockholders of the company for subscription pro rata to their present holdings. In other words, each common stockholder will be entitled to subscribe to as many shares of second preferred stock as will equal 10 per cent of his present holdings in common stock, and to five shares of common stock for each single share of second preferred stock to which he is entitled to subscribe. As stated elsewhere in this issue, the Republic Rubber Corp. has recently acquired the assets and factory of the Knight Tire & Rubber

Co., at Canton, Ohio. The gross sales of The Republic Rubber Corp. are now running at the rate of approximately \$18,000,000 per annum, more than three times the average annual volume of business done by the Republic and Knight companies for the three years previous to 1917, and more than double the volume of business done by those companies in any one of these years. During the six months' period ending August 31, 1918, the net profits of the Republic company were in excess of \$900,000.

CARLISLE IN NEW YORK.

The Carlisle Sales Co., Inc., has recently been incorporated in New York State, as noted in our issue of November 1, 1918, for the purpose of taking over the business of the Carlisle Cord Tire Sales Co. and the distribution of the products of the Carlisle Cord Tire Co., Inc., of Andover, Massachusetts. J. E. Demar is president of the corporation and L. Treboul, secretary. The concern has opened offices and stock rooms at 237 West 58th street, New York City.

KEYSTONE ELECTS DIRECTORS.

The Keystone Tire & Rubber Co., 1877 Broadway, New York City, has elected the following directors: Joel Jacobs (treasurer); L. Walter Lissberger, 1877 Broadway; Nathan J. Miller, Miller & Co., 120 Broadway; Julius Lichtenstein, American Sumatra Tobacco Co., 142 Water street, and Sydney Bernheim, Bernheim & Loewenthal, 35 Nassau street, all of New York City.

ORGANIZATION AND FUNCTIONS OF THE HOOD RUBBER CO.'S SERVICE DEPARTMENT.

FUNCTION OF SERVICE DEPARTMENT UNDER SERVICE MANAGER TO CREATE AN EFFICIENT, HEALTHY, STABLE BODY OF WORKMEN.

Employment.	Health.	Safety and Sanitation.	Education.	General Service.
Functions.	Functions.	Functions.	Functions.	Functions.
<ol style="list-style-type: none"> 1. Knowledge of sources of supply. 2. Knowledge of factory requirements. 3. Knowledge of hours of work. 4. Knowledge of wages. 5. Knowledge of work environment. 6. Proper selection of applicants by— <ol style="list-style-type: none"> (a) Careful interview. (b) Knowledge of past record. (c) Knowledge of physical condition. (d) Knowledge of job requirements. 7. General instructions to new employees. 8. Follow up of service record. 9. Investigation of absences. 10. Transfers and promotions. 11. Investigation of grievances. 12. Interview all leaving employees. <ol style="list-style-type: none"> (a) To approve discharge. (b) To check up foreman's reason for leaving. (c) To insure an impartial hearing. 13. Keep adequate individual records. 14. Keep detailed turnover records. 15. Furnish State and Federal records. 16. To act as clearing house for general employment work. 	<ol style="list-style-type: none"> 1. Physical examination of applicants. 2. Physical examination of present employees. 3. Periodic reexamination of employees exposed to industrial hazards. 4. Periodic reexamination of employees exposed to industrial hazards. 5. Advise employment dept. on placement of defectives. 6. Treatment of medical cases. 7. Treatment of surgical and accident cases. 8. Treatment of dental cases. 9. Treatment of ocular cases. 10. Prevention of a communicable disease and epidemics. 11. Cooperation with employment department and safety department in investigating absences. 12. Furnishing employment department with data concerning employees who are leaving on account of ill health. 13. Keep adequate examination and treatment records. 14. Furnish statistics pertaining to health. 	<ol style="list-style-type: none"> 1. Reduction of accidents by— <ol style="list-style-type: none"> (a) Education. (b) Safeguarding hazards. (c) Following up of accidents and near accidents. 2. Frequent factory inspection, by— <ol style="list-style-type: none"> (a) Safety engineer. (b) Members safety committee. 3. Reports all accidents to proper authorities. 4. Cooperate with employment and health department in shortening periods of disability. 5. Facilitate compensation payments. 6. Keep adequate records and statistics. 7. Supervision of— <ol style="list-style-type: none"> (a) Drinking water supply. (b) Ventilation. (c) Lighting. (d) Heating. (e) Toilets and locker rooms. (f) Janitor and matron service. (g) General sanitary condition. 8. Elimination of industrial disease hazards. 9. General supervision of working conditions. 	<ol style="list-style-type: none"> 1. Bulletin board information. 2. General instructions to employees. 3. Circulation of current magazines. 4. Circulation of library books. 5. Instructions in— <ol style="list-style-type: none"> (a) Health. (b) Hygiene. (c) Care of teeth. (d) Care of eyes. 6. Factory publication. 7. Organization clubs. 8. Americanization work. 	<ol style="list-style-type: none"> 1. Store for employees. (Groceries sold at cost.) 2. Farm. (Vegetables raised and sold at cost.) 3. + Restaurant service. 4. Supervision of housing. 5. Supervision of recreational activities. 6. Supervision of supernannuated employees. 7. Supervision of Mutual Benefit Association. 8. Supervision of thrift activities. <p>+Not under service organization.</p> <p>Prepared by Robert S. Quinby, M.D., Service Manager, Hood Rubber Co.</p>

The outline above shows clearly the comprehensive and highly commendable plan adopted by the Hood Rubber Co., Watertown, Massachusetts, to maintain a stable body of efficient employees. Labor is becoming such a grave problem that all methods tending to build up an able and contented working force and to reduce the labor turnover to the minimum are money-savers of more than normal interest.

Trade Acceptances for the Rubber Goods Manufacturer.

By Russell Raymond Voorhees.

IN our discussion of trade acceptances in the May, 1917, issue, we took up the advantages that this financial paper offers to the buyer of rubber goods. We found just what the benefits are to the rubber goods dealer and that they are certainly vital enough to warrant every dealer using them when he makes time purchases. But in addition to the advantages that trade acceptances offer to the dealer they also possess equal advantages for the jobber and manufacturer. Every jobber or manufacturer of rubber goods should ask for trade acceptances when he sells goods on credit. They are just as valuable to him in his way as they are to the dealer when he makes a purchase.

In the first place, the use of trade acceptances will fix the exact amount of the bill at once. It is too often the case in

business that when the time for payment comes the buyer may advance a derogatory claim with reference to the goods in order to defer the date of settlement. Of course, in many cases the claim is just, but at least it should have been taken up before the last minute.

Mistakes are bound to happen in any business, yet it would seem that the bulk of such mistakes could at least be rectified at once without waiting until the date of payment arrives. If a trade acceptance is asked for when a jobber or manufacturer sells the bill of goods there will be no come-back later as to the

amount owing. Since the exact amount of the obligation is written across the face of the instrument and by endorsing it the buyer accepts the amount as correct, it can be seen that trade acceptances are a means of practically closing a transaction at the time of purchase.

One of the common abuses of business is the unearned discount. Time buyers all too often take off the regular cash discount when they come to pay their bills, and jobbers and manufacturers in many cases are helpless to remedy this evil. They fear that if they try to put a stop to this practice the buyer will take his trade elsewhere regardless of who is in the right. For this reason it is often allowed to run on, with the result that time buyers buy on the same terms as the cash customer, which is most unfair to the buyer and to the seller. Trade acceptances

are not subject to discount at the time of payment, and as they have the exact amount written on the face there can be no opportunity offered for taking an unearned discount at the time of settlement. The general use of trade acceptances will without doubt remove from business this more unhealthy practice and give to every jobber and manufacturer all that is due them.

In addition to the saving of unearned discounts, trade acceptances will give the seller of rubber goods a cheaper method of collecting his accounts. When the buyer of the goods gives the acceptance, he writes across the face of it the bank at which it is to be paid and when it falls due, and that bank attends to the collecting, thus removing a bother and an expense from the hands of the jobber or manufacturer. This certainly is an economic method.

Overbuying is

without doubt one of the big causes of failure in this country.

There is far too much speculation in the average business and sooner or later some companies fall by the wayside with large stocks on hand.

And just as surely as overbuying is one of the chief causes of failure, so is overcredit one of the chief causes for overbuying.

Too many dealers who buy on time take no thought of meeting their obligations, but plunge ahead until the day of reckoning.

When trade acceptances are substituted for the open account it is only a short

time before the poor risk is brought face to face with obligations that are due and many failures to meet them will prove his undoing. A buyer who gives an acceptance at the time of purchase will realize that he is making an obligation that he must meet, and it will generally be found that he will try harder to meet it than if it were simply an open account where promises can take the place of cash.

And right along this line there is a point that is worth mentioning. The loss that jobbers and manufacturers incur by means of bad accounts will be materially lowered. It will be but a short time, a few months, when the bad risk will be eliminated and when that is done it will be found that profits will be materially higher than at present. More accounts will be paid when due and less will be lost through failures.

Date.	Member banks.	Nonmember trust companies.	Nonmember State banks.	Bankers' acceptances.			Foreign bank branches and agencies.	Private banks.	Total.	Trade acceptances bought in open market.	Total acceptances.
1915.											
Feb. 22.....	\$93,000								\$93,000		\$93,000
Apr. 5.....	3,653,000	\$7,820,000	810,000	\$110,000					11,593,000		11,593,000
July 3.....	4,842,000	5,267,000	738,000	161,000					9,970,000		9,970,000
Oct. 4.....	9,900,000	4,898,000	132,000	343,000					14,373,000		14,373,000
Dec. 6.....	12,311,000	5,172,600	275,000	396,000					18,154,000		18,154,000
1916.											
Jan. 3.....	13,494,000	7,160,000	362,000	822,000					23,838,000		23,838,000
Mar. 6.....	17,000,000	8,700,000	470,000	1,463,000					28,503,000		28,503,000
Apr. 3.....	21,000,000	13,573,000	473,000	3,262,000					38,308,000	723,000	39,031,000
May 1.....	24,875,000	15,400,000	585,000	3,430,000					44,290,000	1,477,000	45,767,000
June 1.....	32,989,000	18,921,000	471,000	11,830,000					64,211,000	3,422,000	67,633,000
Aug. 7.....	36,695,000	19,069,000	738,000	13,940,000					70,433,000	4,225,000	74,658,000
Sept. 4.....	41,413,000	20,365,000	726,000	12,491,000					74,986,000	3,673,000	78,659,000
Oct. 2.....	37,988,000	21,782,000	712,000	9,944,000					70,236,000	2,306,000	72,542,000
Dec. 4.....	47,748,000	33,233,000	1,630,000	16,069,000					98,679,000	4,487,000	103,166,000
1917.											
Jan. 1.....	66,803,000	34,625,000	1,502,000	18,224,000			121,154,000	4,585,000	125,739,000		125,739,000
Feb. 5.....	50,361,000	23,511,000	972,000	13,775,000	\$140,000		88,759,000	4,041,000	92,800,000		92,800,000
Mar. 5.....	53,288,000	32,518,000	1,090,000	20,581,000	354,000		107,837,000	2,535,000	110,366,000		110,366,000
Apr. 2.....	43,579,000	20,335,000	689,000	16,830,000	500,000		82,026,000	1,144,000	83,170,000		83,170,000
May 2.....	49,192,000	19,650,000	236,000	19,177,000	94,000		88,349,000	1,679,000	90,028,000		90,028,000
June 4.....	69,262,000	27,611,000	584,000	11,077,000	396,000		118,771,000	3,002,000	121,795,000		121,795,000
July 14-16.....	106,997,000	30,390,000	3,333,000	35,082,000	1,488,000		184,785,000	4,660,000	189,445,000		189,445,000
Aug. 1.....	112,433,000	43,107,000	2,564,000	20,782,000	1,087,000		176,973,000	4,241,000	184,215,000		184,215,000
Aug. 31.....	94,597,000	33,273,000	2,312,000	18,086,000	1,369,000		149,637,000	4,935,000	154,589,000		154,589,000
Sept. 29.....	131,997,000	14,997,000	2,193,000	21,708,000	2,286,000		173,171,000	6,042,000	180,113,000		180,113,000
Oct. 31.....	150,301,000	3,147,000	1,307,000	21,083,000	2,153,000		172,901,000	6,234,000	184,216,000		184,216,000
Nov. 30.....	171,723,000	5,338,000	753,000	18,201,000	3,163,000		199,126,000	6,275,000	205,453,000		205,453,000
Dec. 31.....	227,717,000	8,163,000	3,179,000	20,137,000	7,657,000		266,883,000	6,383,000	273,236,000		273,236,000
1918.											
Jan. 31.....	240,259,000	5,547,000	3,522,000	22,099,000	6,947,000		278,374,000	6,363,000	284,737,000		284,737,000
Feb. 28.....	257,747,000	1,648,000	1,886,000	26,419,000	7,667,000		293,267,000	4,476,000	299,223,000		299,223,000
Mar. 31.....	275,144,000	1,360,000	1,884,000	31,779,000	8,562,000		318,729,000	8,015,000	326,744,000		326,744,000
Apr. 30.....	248,390,000	6,810,000	2,907,000	25,921,000	10,304,000		288,176,000	9,270,000	297,455,000		297,455,000
May 31.....	267,912,000	1,330,000	5,168,000	26,317,000	6,398,000		299,030,000	8,276,000	307,306,000		307,306,000
June 30.....	274,698,000	459,000	1,499,000	21,478,000	12,315,000		299,942,000	7,418,000	307,360,000		307,360,000
July 31.....	354,614,000	1,129,000	7,302,000	18,032,000	8,975,000		390,102,000	7,781,000	397,883,000		397,883,000
Aug. 31.....	188,366,000	1,717,000	8,264,000	19,167,000	8,450,000		255,964,000	8,806,000	264,770,000		264,770,000

Table showing the value of Trade Acceptances bought in the open market since the last cent-in-interest and held by Federal Reserve Banks as per schedules on file with the Federal Reserve Board on dates specified, distributed by classes of accepting institutions.

Turnover is without doubt the secret of success in the game of merchandising, no matter whether one be a buyer or seller of goods. The ability to turn over capital often will mean that profits will be large, regardless of whether one is a retailer, jobber or manufacturer. And trade acceptances offer the means of turning money over often. When they are used a jobber or manufacturer will be able to realize cash on each and every transaction, and by so doing will be able to discount bills at once and use the money, instead of having it tied up in the business of others. Trade acceptances put the entire business on a cash basis and this is the cream of business.

Since this would be the case the need for large amounts of working capital will not be in evidence. A cash business does not require the working capital that a credit business does and in addition the net earnings, in proportion to capital invested, will be materially larger if trade acceptances are substituted for the present system of open accounts.

The jobber and manufacturer finds that trade acceptances offer him an ideal method of raising cash for use in his business. At present he can get it on his own note or by pledging his accounts receivable, but neither method is any too satisfactory and both are more expensive than discounting acceptances which furnish the required capital as quickly and cheaply as it is possible to do it. The use of acceptances tends to give the jobber or manufacturer a better standing at his bank. If they are substituted for the open account his bank will see who his customers are, and there is no better way to obtain influence at your bank than to let them know who your customers are.

Trade acceptances enlarge your borrowing facilities. At present the amount that can be loaned on your own one-name paper may, perhaps, be limited, but with trade acceptances it is different. A bank is limited in the amount it can loan on the paper of any one acceptor, but since a jobber or manufacturer has many customers the banks can loan up to the limit on the paper accepted by each customer, and in that way the jobber or manufacturer will be able to get many times the amount of money that he would have been able to get under the present method of one-name paper. It can be truthfully said that trade acceptances offer unlimited borrowing facilities.

Trade acceptances give the seller of goods a chance to plan his business with some degree of assurance that his plans will be carried out. He is assured that every month he will have a more or less fixed income, a cash income, and this means that he can build up his business without the worry of collecting the money that is owing him.

For the jobber or manufacturer who does not need the money at once, trade acceptances are also of vital service. Their use will remove from business many of the abuses that have been discussed here and in addition can be used as a reserve to be discounted in case of great financial stress or whenever the occasion calls for more capital than the house has at that time. There are several of the larger houses which ask for trade acceptances but do not discount them. They employ them because they eliminate from business the abuse of the unearned cash discount, the protested account and other petty grievances, and in addition give them a quick method of raising additional capital should the occasion arise.

Taken all in all, trade acceptances are of vital use for the jobber or manufacturer of rubber goods. We have seen how they would benefit the retailer, also how they will benefit the jobber and manufacturer. To be sure, they are still new and many large houses are not fully aware of their value. But under conditions such as we have at present, when every turn of capital means something, it would be well for the trade as a whole to study and make use of them as valuable aids to modern business progress.

The practice of individual thrift is a patriotic duty and a necessity.

NEW INCORPORATIONS.

Amazon Tire Co., Inc., The, October 23 (New York), \$10,000. F. H. Findley, 246 East 207th street, New York City; O. Moynihan, 360 West Market street, L. J. Schott, 249 South Arlington street—both of Akron, Ohio. To manufacture auto tires and rubber goods.

American Webbing Manufacturers Export Corp., November 23 (New York), \$100,000. M. Griffin, 812 Suburban Place, Bronx; E. K. Cunningham, 485 Central Park West, both of New York City; C. H. McLean, Passaic, New Jersey. To export webbing and webbing products.

Chicago Scrap Rubber Base Co., November 7 (Illinois), \$5,000. W. A. Roonet, L. Gaizat, E. J. Hess. Principal office 2204 South Throop street, Chicago, Illinois. To manufacture, buy, sell, repair and deal in vehicle parts of all descriptions, accessories, scrap rubber, etc.

Davenport Tire & Rubber Co., Inc., November 14 (New York), \$1,000. Sydney Bernheim, 35 Nassau street, New York City; C. A. Weldon, 591 7th street, P. B. Kittay, 823 Monroe street—both of Brooklyn, N. Y. To conduct tire manufacturing business.

Gettelt Co., Noble H., November 14 (Delaware), \$40,000 preferred stock, 550 shares common stock without nominal or par value. C. L. Rimlinger, M. M. Clancy, P. B. Drew—all of Wilmington, Delaware. Principal office with the Corporation Trust Co. of America, Du Pont Building, Wilmington, Delaware. To manufacture and deal in tires and inner tubes for automobiles.

Glamorgan Tire & Rubber Corp., October 21 (Delaware), \$250,000. M. Howells, Orrville P. Jones, Warren—both of Ohio; J. T. Thomas, Woodlawn, Pennsylvania. To manufacture and deal in automobile and bicycle tires, inner tubes and rubber accessories.

Industrial Supervision Co., Inc., November 8 (New York), \$4,000. S. Bernheim, 35 Nassau street, New York City; C. A. Weldon, 591 7th street, M. Kittay, 723 Monroe street—both of Brooklyn—all of New York. To supervise the manufacture of tires, etc.

Miller Rubber Co., W. T., September 17 (Indiana), \$10,000. W. T. and D. Miller, W. W. Shelley—all of Elkhart County, Indiana. Principal office, Elkhart, Indiana. To manufacture, purchase and sell motor tires, accessories and supplies and all kinds of vulcanizers and all such machinery used in the process of making and repairing motor tires, accessories and supplies.

National Wool Stock Co., October 2 (Delaware), \$300,000. C. L. Rimlinger, M. M. Clancy, F. A. Armstrong, all of Wilmington, Delaware. Principal office within the State, with the Corporation Trust Co. of America, Du Pont building, Wilmington, Delaware. To deal in rubber and scrap materials, etc.

Preston Tire Co., of Houston, Texas, September 26 (Texas), \$15,000. C. and N. J. Kavanagh, C. R. Bender—all of Houston, Texas. To purchase and sell wares and merchandise and agricultural and farm products.

Record Tire & Mfg. Co., Inc., November 21 (New York), \$50,000. J. A. Roberts, 256 Broadway, J. H. Devereux, 233 Broadway, G. N. Shafer, 324 West 103rd street—all of New York City. To manufacture tires, tubes, etc.

Truck Tire Sales & Service Co., October 25 (New Jersey), \$50,000. J. M. and E. Goodridge, T. N. Balderston—all of 42 Barnes street, Trenton, New Jersey. Principal office, 42 Barnes street, Trenton, New Jersey. Agent in charge, T. N. Balderston. To deal in truck tires.

Yarnall-Waring Co., February 11 (Delaware), \$2,000. C. L. Rimlinger, M. M. Clancy, F. A. Armstrong—all of Wilmington, Delaware. Principal office with the Corporation Trust Co. of America, Du Pont Building, Wilmington, Delaware. To manufacture and deal in valves, clamps, gages and similar appliances for boilers, motors and other machinery.

Jar-Ring Tests.¹

By Charles P. Fox.

Ring cut the odd,
Ring in the air,
Ring out the false,
Ring in the true.
—CROCODILE.

FOLLOWING up a complaint made by Mrs. A. H. Throckmorton, 2600 Wellington road, Cleveland, Ohio, in October, 1917, concerning the loss of canned fruit by spoilage, due to faulty jar rings, led to a preliminary investigation of the quality of jar-rings sold in Cleveland. The results of this examination showed the need of a thorough control of the jar-ring trade.

In the latter part of 1917 and the early part of 1918, 388 samples, representing about 60 brands of jar-rings, were examined. On the basis of brands examined, approximately 70 per cent were safe, 20 per cent doubtful, and 10 per cent worthless.

By "safe" we mean that the ring is suitable for use upon the old style Mason screw-top jar, and using the "cold pack" system of canning.

A "doubtful" ring is one which is good while fresh but which rapidly perishes when exposed to air and sunlight, or has been kept for a long time in stock.

A "worthless" ring is wholly unfit for use. It may be too thin, "perished," "weak," or dirty (covered with soapstone or sulphur), or have an objectionable odor.

These tests will determine the quality of a ring:

PINCHING TEST.—Double the ring upon itself and pinch firmly; ring must not crack.

TWISTING TEST.—Twist ring quickly two or three turns, holding ring under a slight tension; ring must not break or tear.

PULLING TEST.—Stretch ring by pulling and note strength and

quired in the cold pack system. Many rings, apparently safe by other tests, when tested in this way show unfitness by becoming soft, are cut through by the lid, or lose their shape so that they are easily misplaced and the seal broken.

Jar-rings are sold in bulk or cartons. Cartons contain one dozen rings. Cartons with short count and with broken rings have been found in several cases. The popular price is 10 cents per dozen; however, price is no guide to quality. Good-quality rings often sell for less money than an inferior grade.

Good rings can be bought; use them. Housewives should remember that jar rings, like wedding rings, must be made of good material. The chemist applies the "acid test" to the wedding ring. The highest grade of jar rings will stand the "alkali test." Poor rings will not. Low-grade rings—those made up largely of mineral matter and oil substitutes, the kind that do not age well—"go to pieces" when treated with boiling alcoholic soda.

This test, while reliable, is rather severe, is inconvenient to apply, and can only be used successfully by a chemist. A pre-gaging test carried out by heating the rings in a water oven for 10 hours often indicates what results may be expected of a ring when kept in stock for a long time.

A mid-summer examination of the jar-ring trade in Dayton, Ohio, shows a slightly better condition than expected. Dayton is a smaller city than Cleveland, and, perhaps, its housewives are



PULLING TEST.

PINCHING TEST.

TWISTING TEST.

elasticity. A good ring should require at least a 15-pound pull before breaking. We have tested rings that required more than a 25-pound pull to break them.

A general or "once over" test will often show the presence of much soapstone in the carton. While soapstone may be harmless, it is unnecessary. Good rings do not require it. Its presence indicates either poor material or careless factory methods, and it makes extra work for the busy housewife.

Another thing to be looked after is size. A standard ring—one that will give best results under all conditions—should be 1/12-inch thick and 10/32-inch wide.

These tests should be made at the counter at time of purchase. If convenient, or in doubt, test out the ring by adjusting to a jar submerged in boiling water, following closely the conditions re-

more careful buyers. They take nothing for granted and usually make their purchases in person and with great care. They demand good quality.

A smaller number of brands of jar-rings are offered for sale and they are of a better grade. Several of the standard brands are represented and there is a great demand for a certain well-known make, a fact which again proves the truth of the slogan, "It pays to advertise."

¹Ammon's Note: "The material in this paper was gathered in work along 'food conservation' lines."

These tests are the results of adoption and application of information obtained from many sources. While they answer the purpose intended, they are not perfect, and are open to criticism from the standpoint of ultra-technical investigators. The object in presenting the subject was twofold: (1) to bring before the public the condition of the jar-ring situation and the need of jar-ring inspection, and (2) to get manufacturers, through their technical departments, interested in developing specifications and tests for this article.

The interest shown by the rubber section of the American Chemical Society at the Cleveland meeting, September 11-12, 1918.

¹Read at the annual meeting of the rubber section of the American Chemical Society, held at Cleveland, Ohio, September 11-12, 1918.

What the Rubber Chemists Are Doing.

THEORY OF LATEX COAGULATION.

In a paper on the theory of latex coagulation, by G. Stafford Whitby, published in the "Agricultural Bulletin of the Federal Malay States," June, 1918, the author states that he has confirmed the views of Barrowcliff expressed in a recent article (THE INDIA RUBBER WORLD, October 1, 1918), namely, that the agency responsible for the natural coagulation of *Hevea* latex is enzymic; not only natural coagulation, but coagulation resulting from the addition of acetic acid appears to be due to enzymic activity. The function of the acid in acetic acid coagulation appears to be the activation of a coagulating enzyme. Barrowcliff found that the latex which had been sterilized by running it into an equal volume of boiling water was no longer coagulated by acetic acid, but became so if treated with a few drops of fresh latex. The author remarks that the conclusion to which this observation points—that the function of acetic acid in the ordinary process of latex coagulation is to activate an enzyme—resolves certain anomalies involved in the view that the separation of rubber from its colloidal emulsion by acid is a physico-chemical phenomenon in the ordinary sense.

The author states that the object of his paper is primarily to compare, in certain aspects, the coagulation of latex with the coagulation of cow's milk and to record a number of experimental results. Whitby makes closer examination of certain aspects of the analogy indicated by Barrowcliff between latex coagulation and the coagulation of milk by rennin. Somewhat condensed, the author's studies are given as follows:

1. COAGULATION OF STERILIZED MILK. Boiled milk can be coagulated by added acid in the same way as unboiled milk. Sterilized cow's milk in contradistinction to latex sterilized by Barrowcliff's procedure, was coagulable with acetic acid.

2. CRITICAL CONCENTRATION OF ACID FOR MILK COAGULATION. In the coagulation of milk by added acetic acid or added lactic acid there is what may be called a critical concentration of acid. Below this concentration no coagulation occurs. Even when the acid added is only ten per cent less than this quantity no coagulation occurs, but when the critical amount or more is added immediate clotting takes place.

This behavior of milk stands in very marked contrast with the behavior of *Hevea* latex towards increasing amounts of added acid. In the case of latex there is no critical concentration at which immediate clotting occurs and below which no clotting is obtained. There is a wide range over which acid concentration can be varied and great differences in the rapidity with which coagulation can be brought about.

3. ANTI-COAGULATING EFFECT OF A DEFICIT OF ACETIC ACID IN MILK. A more striking contrast with the effect of added acetic acid on *Hevea* latex is that an amount of acetic acid below the critical amount not only fails to produce coagulation in milk, but has a pronounced anti-coagulating effect due presumably to an unfavorable effect on the growth of the lactic acid bacterium. In the case of *Hevea* latex, acetic acid in amounts less than that necessary for rapid coagulation has no anti-coagulating effect. Diminishing the amount of acid added simply renders the coagulation slower. The fact that acetic acid has no anti-coagulating effect on *Hevea* latex tells against the bacterial hypothesis of latex coagulation.

4. TIME FACTOR IN THE FORMATION OF A CLOT. The clotting of milk by added acid is a practically instantaneous process, whereas the time occupied by the formation of a clot in latex may, by adjustment of the amount of acid added, be varied over a period of from three minutes to eight hours. There is thus, negatively, a failure of analogy between latex coagulation and the acid coagulation of milk in regard to the time factor, but there

is, positively, a close analogy between the effect of acids on latex coagulation and their effect on the coagulation of milk by rennin, as shown by the results of Gerber.

In the absence of all other considerations, the slowness with which coagulation takes place in ordinary plantation practice would seem to afford a strong presumption that the coagulation of latex under the influence of added acid is not a direct physical phenomenon but involves the activity of an enzyme.

5. ACID CONCENTRATION FOR NATURAL COAGULATION. In the case of the coagulation of milk by the addition of acid or by natural souring, the occurrence of coagulation appears to depend substantially upon the presence of a certain concentration of acid. When, as a result of natural souring, the acidity has reached a certain point, clotting occurs. Under ordinary conditions of souring at 20 degrees C. milk will coagulate when the lactic acid reaches 0.6 to 0.7 per cent.

In the case of latex the development of acidity has not been studied as closely as in the case of milk, but it seems clear that the natural coagulation of latex is not a simple function of its acidity. It has been demonstrated experimentally by the author that the amount of acidity engendered naturally in latex may be very greatly in excess of that which it would be necessary to add to fresh latex in order to produce coagulation which reveals a further failure of analogy between latex coagulation and that of milk.

6. NATURE OF THE CLOT. In outward character, particularly as regards coherency, the clot produced in milk by enzymic action is more analogous to the ordinary rubber coagulum than is the clot produced in milk by natural or added acid. The ordinary rubber coagulum resembles the coherent clot produced by rennin rather than the floccular clot which is first produced in milk by souring or by the addition of acids.

7. INFLUENCE OF CALCIUM SALTS. That calcium chloride is capable of leading to the coagulation of latex was recorded some years ago. It has been suggested by Eaton that the influence of soluble calcium salts in promoting natural coagulation is due to the presence of calcium being favorable to certain anaerobic organisms. There does not, however, seem to be any analogy for this suggestion, either in the coagulation of blood or in the acid or enzymic coagulation of milk. An analogy between the action of calcium chloride on latex and its action on the enzymic coagulation of milk is indicated in its activation of rennin.

8. BACTERICIDES AND ENZYME PARALYZERS. Natural coagulation is not prevented or retarded by toluol, thymol or chloroform water but is prevented by such an agent as hydrocyanic acid. Hydrogen sulphide, although acidic, retards or prevents coagulation.

9. INFLUENCE OF OXYGEN. In apparent contrast to the case of milk the natural coagulation of *Hevea* latex is not dependent upon the surface exposed.

10. POSSIBLE SIGNIFICANCE OF THE "GAP." Barrowcliff points out that, on the view that an enzyme is concerned in latex coagulation, the fact that hydrochloric acid in certain comparatively high concentrations fails to coagulate latex may be due to the destruction or paralysis of the enzyme by this concentration of acid. In such case, at still higher concentrations, the acid would appear to have a direct clotting effect. It has been shown that on adding increasing quantities of hydrochloric acid to samples of latex a point is reached comparatively soon at which no coagulation occurs, but that on continuing to increase the amount of acid added, a point is reached at which coagulation again begins to take place. There is a gap over which no coagulation occurs. The position of this gap was found to be approximately from a concentration of hydrochloric acid corresponding to three

cc. one in ten hydrochloric per 100 cc. of ten per cent latex to ten cc., one in ten hydrochloric per 100 cc. ten per cent latex.

A similarly located gap over which no coagulation, or only very incomplete coagulation occurs, is noticed in the case of nitric acid.

CONCLUSION.

The coagulation of cow's milk under the influence of rennin offers a much closer analogy to the coagulation of *Hevea* latex than does the clotting of milk by added acids or natural souring, and the salient agency in latex coagulation is probably enzymic.

The initial formation of the clot in fresh latex allowed to undergo natural change is probably due to enzymic action and the same agency, activated by acids, is probably responsible for acetic coagulation. Bacterial action is viewed, in regard to the occurrence of natural coagulation in latex, as a secondary factor only.

In addition to coagulation taking place ordinarily under the influence of an enzyme, there may occur under special conditions coagulation of other types—viz., the delayed coagulation in latex which has been subjected to sterilization, due to the ultimate putrefactive decomposition of the latex; the non-coherent coagulation produced by heat or by protein precipitants, particularly by tannic acid, and not improperly the coagulation produced by hydrochloric and nitric acids on the far side of the "gap" which is associated with the addition of increasing quantities of these acids to latex.

Very much remains for investigation in connection with latex coagulation. It is believed that at the present stage the enzymic hypothesis of coagulation affords the best explanation of the facts.

OYOGALITH, THE FRENCH GALALITH.

A French manufacturing company, called the Oyonnaxian Co., located at Oyonnax, a well-known French industrial center, has perfected a new non-inflammable product from casein similar but superior to German galalith. This product is designated as oyogalith and is sold under that name, manufactured into such articles as buttons, buckles, rings, combs, knife handles, etc. This new material is cited by "Le Caoutchouc et la Gutta-Percha" as one of the many successful substitutes for German-made material which has been developed during the war.

WATERPROOFING BRAIDED CORD.

Cord can be waterproofed either before or after braiding. Various methods of proofing, says the "Textile World Record," can be used in either case. For example, cotton yarn may be proofed in a solution of 30 pounds of alum in 50 gallons of water to which 30 pounds of sugar of lead has been added. The yarn must be soaked for two hours, after which it is lifted out of the solution and drained, then passed through a weak soap solution, which results in a deposit of an aluminate of the soap fat in the yarn. Or one can proof yarn in the following solution: dissolve 50 pounds of alum in 500 pounds of water, soak 50 pounds of glue in 10 gallons of water overnight, heat to boiling in the morning and when solution is complete stir in 2½ pounds of tannic acid and 1 pound of silicate of soda, add the entire quantity to the alum solution, mix thoroughly and cool to about 170 degrees F., immerse the yarn till saturated, squeeze and dry.

A mixture of rubber and paraffin wax waterproofs well; it also insulates. Melt 5 pounds of paraffin wax in an iron pot, add 1¼ pounds of scrap rubber, heat until rubber is dissolved, cool and permit solidification, then cut into cubes for use. Weigh the yarn or other material to be proofed in a dry state; for every eight pounds allow one gallon of benzine in which three ounces of the paraffin rubber mixture has been dissolved. Soak the yarn in the solution, which will soon be soaked up, then let the benzine evaporate; a waterproof deposit will be left on the yarn. If cable has been so treated, a finish may be given by

passing it between heated grooved rollers, cable can be rubbed by paraffin wax before going through the rollers. Finally, cable can also be waterproofed by drawing it through melted paraffin in a long shallow pan, the cable being kept below the surface by guide rollers; upon leaving the pan of wax it is drawn between wipers, then through grooved finishing rollers and coiled.

DEPOLYMERIZATION OF RAW RUBBER.

K. Kawakami presents his views on the depolymerization of raw rubber in the "Journal of Chemical Industry," Tokio, Japan, of which the following abstract is made by the "Journal of the Society of Chemical Industry," London, August 31, 1918. The author criticizes and points out inaccuracies in the experiments by Takenchi, but agrees with the general proposition that viscosity measurements may be of value in controlling the processes of manufacture. The viscosity is not an absolute function of depolymerization, since it is affected also by the non-caoutchoue matters, namely, proteins and rubber resins, which will not change in the same proportion as the caoutchouc. The degree of variation of the acetone extract during mastication falls within the limits of experimental error. The viscosity of raw rubber cannot be used as a sole measure of valuation, because there are several factors of value which have nothing to do with the viscosity of the solution: for instance, the amount of impurities and loss in washing, also the physical and chemical properties of the vulcanized products. The proper periods of mastication obtained from Takenchi's curves, on the basis of an absolute viscosity of 0.1 in the rubber solution, work out at 40 minutes for plantation and 80 to 90 minutes for Brazilian *Hevea*, but these periods appear far too long from a technical point of view.

MOISTURE IN RAW RUBBER.

The following abstract is from a paper by G. Stafford Whitly, M. Sc., A. R. C. S. in the "Journal of the Society of Chemical Industry," August 31, 1918:

The present paper records observations made under actual tropical conditions on the variation of the water-content of raw rubber and the relation of this quantity to the humidity of the atmosphere, the form of the rubber, and the presence of serum solids. The observations were confined to rubber produced by acetic acid coagulation from the latex of *Hevea Brasiliensis*. The moisture content of both crêpe and sheet rubber was observed to exhibit a diurnal change, being on a normal day in the Eastern tropics, very markedly higher in the early morning than in the late afternoon. There is a general parallelism between the water-content of crêpe and the degree of humidity of the atmosphere.

The course of drying samples of latex crêpe from shortly after preparation to the time when they were dry showed that after the percentage of water had fallen to about one per cent the samples showed a negative state of drying between sunset to sunrise, the most humid part of the day, the rate of drying being influenced by variations in the degree of humidity of the atmosphere. Sheet rubber was found to be less sensitive than crêpe, as regards its moisture-content, to changes in the degree of humidity of the surrounding atmosphere. It exhibited smaller variations than crêpe in the percentage of water present at different times retaining a higher percentage of water in the middle of a hot, dry day, and absorbing less moisture over night. It is probable that the higher moisture-retaining capacity which sheet samples show under usual commercial conditions, depends upon the fact that the serum solids are removed from the coagulum less completely in the preparation of sheet than in the preparation of crêpes.

The greater readiness with which crêpe, as compared with sheet, increases its water-content in a humid atmosphere may probably be regarded as due to the much greater surface which

this form presents. It would seem that the greater the area of a rubber sample in relation to the weight, the greater is the sensitivity, as regards water-content, to changes in the humidity of the surrounding atmosphere.

The author's chief conclusions are given as follows: The percentage of moisture in raw rubber in the form of sheet or crepe varies considerably with the degree of humidity of the surrounding atmosphere. In rubber-producing climates it shows a diurnal variation. Sheet rubber tends to retain a higher percentage of moisture than crepe. The moisture-retaining capacity of raw rubber is closely associated with the presence of serum solids. The latter are very hygroscopic.

CHEMICAL PATENTS. THE UNITED STATES.

ELASTIC MASS.—An elastic mass and its manufacture. A vulcanized composition consisting of linseed oil which has been oxidized at a temperature of 200-250 degrees C., aluminum stearate, a mineral hydrocarbon of high melting point, an inert filler, and sulphur. (Eduard Salomon Ali Cohen, The Hague, Netherlands. United States Patent No. 1,280,129.)

VULCANIZING PROCESS AND COMPOUND.—Process of vulcanizing rubber-like material which comprises heating, under vulcanizing conditions, a mixture comprising such rubber-like material, a sulphur material and amino menthyl isopropyl benzene. (Chester E. Andrews, assignor to The Walker Chemical Company, both of Pittsburgh, Pennsylvania. United States Patent No. 1,280,940.)

THE UNITED KINGDOM.

SUBSTITUTES FOR EBONITE AND PRODUCT.—Ebonite substitute is derived from waste or new rubber dissolved in a vulcanizable oil such as rape seed oil, with which has been mixed by heat paraffin wax, stearin, or similar substances, and also resinous material. To this mixture is added finely divided filling material, sulphur and other vulcanizing material. The plastic mass is pressed or molded and vulcanized by steam. (Naamloze Vennootschap Nederlandsche-Maatschappij tot Exploitatie Van Optimiet Fabrieken, 200, Van Beuningen-straat, Amsterdam, assignees of S. van Raap, 102, Weesperzijde, Amsterdam. British Patent No. 118,270.)

VULCANIZING INDIA RUBBER.—The invention consists in heating the rubber, etc., previously mixed with a vulcanizing agent, and discontinuing the supply of heat when the rubber has expanded to an extent indicative of the degree of vulcanization derived. (W. J. Mellers-Jackson, 28 Southampton Buildings, London. [Morgan & Wright, Detroit, Michigan, U. S. A.] British Patent No. 118,305.)

THE DOMINION OF CANADA.

RUBBER VULCANIZING PROCESS.—A method of accelerating a vulcanizing process which consists in adding to the rubber mixture an accelerator comprising caustic alkali dissolved in glycerol or glycol. (Douglas Frank Twiss, Sutton Coldfield, Warwick, assignor to The Dunlop Rubber Company, Westminister, London, both in England. Canadian Patent No. 185,317.)

THE FRENCH REPUBLIC.

RUBBER SUBSTITUTE AND PROCESS.—A composition consisting of fish oil or fish scrap relatively rich in fixed oil and a reducing agent, probably sulphur, by which under suitable treatment a commercial product results. (The Western Rubber Co., Tacoma, Wash., U. S. A., French patent No. 487,989.)

CALCULATION OF PRESSURE OF SOLID TIRES ON WHEEL RIMS.

E. Garbali in "Le Caoutchouc et la Gutta-Percha," October 15, 1918, gives the derivation of a mathematical formula for calculating the compression required to secure the non-slip attachment of steel-rim solid tires to wheels under varying conditions of load and speed, giving also the details of calculation in an example.

LABORATORY APPARATUS.

A POWERFUL GAS BURNER.

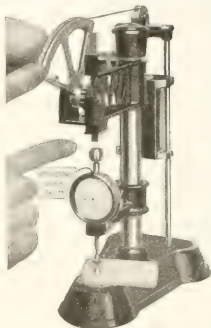
A VERY effective design of gas burner is the "Hughes-Amlasp" shown in the illustration. It is intended for general laboratory use, producing a flame of highest temperature without the use of blast. It burns either natural or artificial gas, and has means for air and gas regulation. By a special perforation system on the chimney, the gas is evenly distributed and mixed, giving an extremely hot flame, making this burner the closest approach to the blast burner. The temperature of the flame is uniform throughout; diameter of the flame, nine-sixteenths of an inch.—(American Laboratory Specialists, Pittsburgh, Pennsylvania.)



HUGHES-AMLASP
GAS BURNER.

RESILIOMETER.

The recently invented instrument known as the resiliometer is being adopted in rubber works laboratories for measuring the resiliency of cured rubber. The resiliometer was originally devised to measure the thickness, hardness and resiliency of mechanical felts for gaskets, washers and piano hammers. It is essentially a combination of a dial type micrometer with a presser foot and platform upon which the material to be tested is placed and a reaction device for determining the compressibility and resilience of the material.



THE WIDNEY RESILIOMETER.

To determine hardness, pressure is exerted on the material under the presser foot by means of the weight attached to the quadrant which sinks the presser foot into the material. The dial reading of thickness after compression, expressed in percentage of the reading of the original thickness, gives the degree of hardness. As the weight is removed after the hardness reading has been taken, the pressure of the weight is entirely released from the presser foot and another reading taken, thus giving the immediate resiliency of the material. (The Widney Company, 320 South Jefferson street, Chicago, Illinois.)

RHOTANIUM WARE.

Rhotanium is stated to be the only and original gold-palladium alloy. It is made in two grades for chemical purposes. Rhotanium "A" in its resistance to alkalis is superior to platinum, and its loss by volatilization at high temperature is also less than for platinum, with melting point at 1,253 degrees C. Rhotanium "C" has a melting point of 1,425 degrees C. Rhotanium ware for laboratory uses is made in all the forms for which platinum has ordinarily been used, with equal satisfaction in service and at much lower prices. (Palo Co., New York City.)

VISCOSIMETER.—A torsion viscosimeter consisting of a torsion element, means for indicating angular deflection and an electric heating coil for controlling the temperature of the substance under test. (Ross F. MacMichel, Auburn, Washington. United States Patent No. 1,281,042.)

Replete with information for rubber manufacturers—Mr. Pearson's "Crude Rubber and Compounding Ingredients."

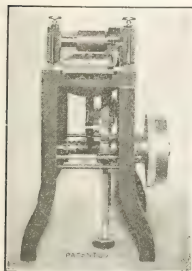
New Machines and Appliances.

THE WARWICK RUBBER TRIMMER.

THESE are several types of overflow-trimming machines employing different forms of mechanical construction in accordance with the work to be performed.

The Warwick machine is designed to remove the rind from moulded rubber goods in large quantities, and employs a new mechanical principle in that the carriage supporting the die reciprocates under a revolving roller. Dies are made conforming to the particular article to be trimmed. In the case of rubber heels, the corresponding die is clamped to the platen and the operator places an untrimmed heel in the die. The machine is started by pressure on the treadle and the carriage carries the die under the roller which cuts the overflow. The finished heel is automatically ejected at the back of the machine and the carriage returns and stops, when the operation is repeated.

The output is limited only by the dexterity of the operator. The output is limited only by the dexterity of the operator, be done on the machine. (Rumrill & Co., 52-58 Purchase St., Boston, Massachusetts.)

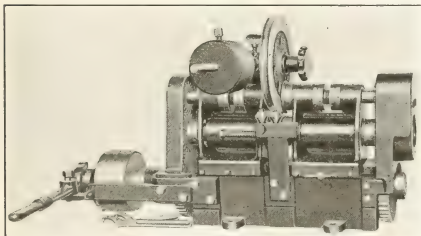


OVERFLOW TRIMMER.

TIRE-BEAD TRIMMER.

Trimming tire beads by hand is an obsolete process in modern plants, due entirely to the development of special bead-trimming machines. A row of hand bead-trimmers wielding heavy shears is rarely seen these days when labor-saving and production are the prime factors in tire making.

While the bead-trimmer shown in the accompanying illustration is familiar to most tire manufacturers, the fact that the



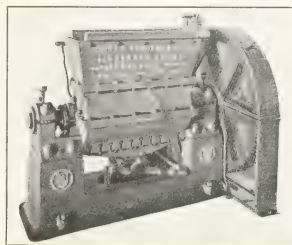
BRIDGEWATER TIRE BEAD TRIMMER.

present machine is the ultimate embodiment of many improvements, makes it worthy of mention.

The machine is simple to operate and in fact it is said that one boy can handle the bead output of the average tire plant, on this trimmer. Reduced to figures, the makers claim that this machine will trim about 90 feet of clincher bead per minute and 15 feet of straight side bead per minute. (Bridgewater Machine Co., W. E. Wilson, selling agent, Akron, Ohio.)

THE "U. E." PLANTATION SCRAP-WASHER.

The washer here pictured is specially designed for the purpose of producing clean crepe from scrap, or blending tree scrap, bark shavings and earth pickings for the manufacture of uniform crepe. Moreover, by washing out the sand, excessive wear



A PLANTATION SCRAP WASHER.

on the rolls of the creping and macerating machines is prevented. The machine and driving shaft are mounted on a rigid bed plate, and the belt-driven shaft is provided with a friction clutch for starting and stopping the machine. On the shaft is keyed a machine molded double helical pinion that meshes with a large gear of similar construction, keyed to the washer-shaft on which are mounted solid disks that revolve within the casing.

The operator the machine, engage the clutch, thereby starting the disks revolving, then open the bottom valve and turn on a full head of water, allowing it to flow straight through the machine without flooding the hopper. In treating ordinary bark shavings containing about 30 per cent of rubber, fill the hopper with shavings half way up, and when the machine has worked this charge for a few minutes and passed away some of the bark, leaving space for more, refill hopper half way up. After the rubber is cleaned, close the bottom valve and flood the hopper with water, allowing the rubber to float to the surface, when it can be picked out by hand. Do not stop the machine, but allow the disks to rotate to enable the rubber that may be at the bottom of the hopper to be worked free and float to the surface.

To obtain the maximum results, remove the rubber as soon as it is formed into lumps, as by this time 95 per cent of the impurities is removed and the remaining 5 per cent can be washed away by the crepeing machine when the lumps are being laced up and rolled into sheets. (United Engineers, Limited, Singapore, Federated Malay States.)

TRANSFER-PRINTING ON INNER TUBES.

The advent of the automobile called for a new kind of printing, that of transfers for imprinting the size and brand on the inner tube. In the early stages of the tube industry, the size and name were put on with stencils, a process neither satisfactory nor economical. After various stages of development, printed transfers were found to be the best.

Although there are different kinds and grades of transfers, all fundamentally alike, the best results, however, are secured by thin cloth, glazed on one side and printed with a sizing and then finished with a copper bronze. The greatly increased cost of cotton, as well as labor, makes these expensive. In curing the tube, the action of the sulphur causes the bronze to change to a dense black. The next best process is to print on the cloth with a special black ink.

Even before the increase of the price of cloth, many tube makers had adopted the use of paper transfers, as they were

much cheaper and gave satisfactory results so far as the transferring qualities are concerned. The only difference in results between the cloth and paper transfers is that of removing the stock after the tube comes from the vulcanizer. The cloth can be readily stripped from the tube, while the paper sticks more or less, according to the compound and the local conditions. Paper labels can be printed with bronze or black ink. In either case special ink and paper are used; the former must not dry hard, and the latter must not absorb the ink. It may be truthfully said that paper perfectly satisfactory for some makers has not been found to work under all conditions.

Printing transfers is a specialty for other reasons than the use of cloth, special paper and bronze or ink, as the type and cuts must be the reverse of those used for regular printing, except that of offset work, the imitation of lithograph, which has practically superseded lithography. After the transfer is printed the reverse of the regular way, it is placed on the sheet of rubber, wrapped around the tube mandrel which is then put in the vulcanizer and subjected to the curing heat. When the tube is taken from the vulcanizer the ink or bronze has left the cloth or paper and been transferred to the tube. (The Goshen Printery, Goshen, Indiana.)

MACHINERY PATENTS. A DUST-PROOF MIXER.

THIS machine embodies radical improvements in the mixer described in THE INDIA RUBBER WORLD, July 1, 1917, such as a dust-proof hopper and a water-cooled feeding weight.

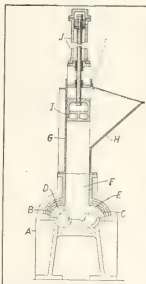
This invention employs, as in the previous one, casing A en-

closing two parallel cylindrical chambers B and C, in which rotary blades D and E are mounted. The upper chamber F is open to the lower chambers. Casing G is provided with an opening on one side communicating with hopper H through which material is fed. Chamber F and that portion of the casing below the hopper-opening form a neck, the cross-sectional width of which is no greater than the distance between the centers of the blade axes. The length of the neck is equal to or greater than $1\frac{1}{2}$ times the diameter of the blades and its cross-sectional area is more, and no less than $1\frac{1}{4}$ times the areas of the mixing chambers, excluding the space occupied by the blades.

The material is forced down by weight I that is attached to the lower end of a piston-rod operating in cylinder J, and may be raised or lowered by any desired power. Preferably the length of the neck, where it is enclosed by four sides, should permit the weight to travel vertically a distance equal to two or more times the diameter of the rotary blades. By proportioning the neck to the size of the cylinders, the operation of feeding and treating bulky material is greatly facilitated. The hopper is provided with a cover consisting of a wire frame covered with fabric which admits air but prevents the escape of dust. (Fernley H. Banbury, Ansonia, Connecticut, assignor to Birmingham Iron Foundry, Derby, Connecticut. United States patent No. 1,279,220.)

United States patent No. 1,279,824 issued to the same inventor and assignor, covers an improved feeding chute, a blower for removing accumulations from the weight, provision for the escape of air and a rod for indicating the position of the weight.

"Rubber Machinery," by Henry C. Pearson, should be in the library of every progressive rubber man.



BANBURY MIXER.

OTHER MACHINERY PATENTS. THE UNITED STATES.

- No. 1,279,220. Shaping device for tire-building machine. F. C. Morton, Cambridge, Massachusetts, assignor of one-half to E. B. Carlisle, Cranston, Rhode Island, and one-fourth to The Goodyear Tire & Rubber Co., Akron, Ohio.
- 1,279,214. Tire core. C. F. Ames, Akron, Ohio.
- 1,279,337. Tire-making machine. W. B. Harsel, assignor to The Goodyear Tire & Rubber Co., both of Akron, Ohio.
- 1,279,404. Annular shuttle for tire-wrapping machine. H. I. Morris, San Diego, California, assignor to The De Laski and Thropp Circular Woven Tire Co., Trenton, New Jersey.
- 1,279,405. Rotary shuttle for tire-wrapping machine. H. I. Morris, San Diego, California, assignor to The De Laski and Thropp Circular Woven Tire Co., Trenton, New Jersey.
- 1,280,003. Repair vulcanizer. R. P. Espinosa, Los Angeles, California.
- 1,280,230. Repair vulcanizer. M. P. Janich, Milwaukee, assignor to D. W. Jones, Waupun—both in Wisconsin.
- 1,280,492. Fabric-coating and calendaring apparatus. F. E. Kip, Montclair, and Edwin P. Ford, Morristown, assignors to The Duratex Co., Newark—all in New Jersey.

THE DOMINION OF CANADA.

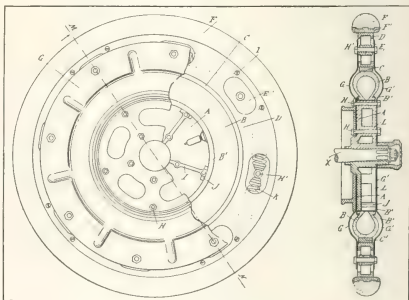
- 185,197. Collapsible tire-core. T. Midgley, Sr., Columbus, and T. Midgley, Jr., Dayton, co-inventors, both in Ohio, U. S. A.
- 185,417. Ball mold. The Canadian Consolidated Rubber Co., Limited, Montreal, Quebec, Canada, assignee of H. Z. Cobb, Winchester, Massachusetts, U. S. A.
- 185,745. Tire vulcanizer. A. A. Bitter and H. K. Wheelock, coinventors, both of Los Angeles, California, U. S. A.
- 185,822. Tire vulcanizer. W. Reilly, Kerrisdale, British Columbia, Canada.
- 185,859. Tire-vulcanizing apparatus. The Doughty Tire Co., assignee of H. J. Doughty—both of Providence, Rhode Island, U. S. A.

THE FRENCH REPUBLIC.

- 487,760. Improvements in hydraulic presses for vulcanization. V. Champigneulle.

MISCELLANEOUS PATENTS. A FRENCH CUSHION WHEEL.

THIS invention covers a vehicle wheel with an annular cushion resembling an ordinary pneumatic tire, arranged between the hub and the solid rubber tire of the wheel. A is the hub, B the pneumatic cushion, and D the rim that supports the solid tire F. Between the tread of the cushion B and the rim D there is loosely placed a metallic ring C. The metal side-disks G and G' are fastened to the hub by bolts H and to the hollow



PNEUMATIC CUSHION WHEEL.

rim D by bolts H'. The resilient power necessary between the disks G and G' and the rim D is produced by springs K, the ends of which are fixed to the rim and disks, respectively.

When the wheel turns, the hub carrying the pneumatic cushion and the disks revolves and transmits motion through the springs and the rim to the solid tire. (J. Gonzalo and R. de Dampierre. French patent No. 486,944.)

PROCESS PATENTS. THE UNITED STATES.

- N**O. 1,280,944. Process of manufacturing brushes having bristles set in rubber. T. F. Barry, assignor to Rubber and Celluloid Products Co.—both of Newark, New Jersey. (Original application divided.)
- 1,281,153. Belt-making process. C. C. Gates, assignor to The International Rubber Co.—both of Denver, Colorado.

THE DOMINION OF CANADA.

- 185,360. Process for vulcanizing rubber tire-treads to casings. W. B. Burke, Cleveland, Ohio, U. S. A.
- 185,653. Process for repairing punctured pneumatic tire casings. W. M. Rand, Vancouver, British Columbia.

THE UNITED KINGDOM.

- 118,303. Process of vulcanizing india rubber, etc. W. J. Mellersh-Jackson, 28 Southampton Buildings, London. (Morgan & Wright, Jefferson avenue, Detroit, Michigan, U. S. A.)

THE FRENCH REPUBLIC.

- 487,958. Process for impregnating and covering fabrics with balata without using solvents. L. Francois & Co.

SNOW'S COMPENSATING DENTAL VULCANIZER.

The fact that rubber shrinks in vulcanizing was brought to the attention of the dental profession over forty years ago. It is responsible for many of the mishaps that occur in the construction of artificial dentures, and is the cause of certain defects

which render them unsanitary, and of others which must be remedied by the dentist before the denture is acceptable to his patient. These defects may be obviated by use of the compensating vulcanizer here shown.

It has a flask-closing apparatus by which the flasks can be closed after they are placed in the vulcanizer, and at any time during the vulcanizing process, at the pleasure of the operator. This is done by the gradual pressure of springs which exert a constant force upon the rubber, following it up as it yields, preventing it from drawing away from the teeth or loosening its hold upon the toothpins, or from drawing away from and leaving an unsightly gap under the shoulders under the bicusps and molars.

As the amount of pressure exerted is shown by the index, the operator is enabled to use more or

less, according to the circumstances of the case. As the springs are placed at the ends of the cross-head which actuates the flask-closing mechanism, they are not exposed to steam or moisture, and consequently will not deteriorate. (The Snow Dental Co., 448-50 Niagara street, Buffalo, New York).



COMPENSATING DENTAL
VULCANIZER.

TIRE FACTORY IN FORT WAYNE, INDIANA.

The Fort Wayne Tire & Rubber Co., Fort Wayne, Indiana, has bought a building site in the north part of the city, where it will erect a factory to cost approximately \$30,000, for the manufacture of the "Wayne" tire. The property covers seven city lots and a plot of one and thirty-five-hundredths acres adjoining, or a total of two and one-half acres. It is located immediately west of the Lake Shore railroad tracks and the right of way of the Fort Wayne and Northwestern interurban line. This will be the first tire factory in Fort Wayne. The officers of the company are: L. R. Welker, L. E. Kraft and J. C. Brown, of Fort Wayne, Indiana; N. F. Rhoton, Bluffton, Indiana; O. W. Kuecken, Chicago, Illinois; and B. F. Henline, formerly with banks at Gibbon and Kearney, Nebraska. Mr. Kraft was at one time with the Hartford Tire Co., the United States Tire Co. and the Cadillac Automobile Co. Mr. Brown was previously with the Genoa Rubber Co., and is senior member of Brown & Kraft, makers and distributors of automobile tires and tubes.

CANADIAN NOTES.

IN accordance with its policy of welfare work for employes, the Dominion Rubber System has erected Dalhousie Hall at Port Dalhousie, Ontario, as a home for women and girls employed in the Maple Leaf Rubber Factory. The construction is of brick trimmed with carved stone, with oak doors, while the woodwork throughout is of satin-finished hardwood. The appointments include an electric range, cold storage and refrigerating facilities, steam boiler heating system, electrically driven pumps for supplying both hard and soft water, laundry, etc. The



DALHOUSIE HALL.

basement includes a large recreation room; the ground floor has a main hall with small reception and cloak rooms, the dining-room and kitchen, and the office of the social secretary. The first and second floors are used for tastefully appointed sleeping rooms. Lake Ontario is only a few hundred yards away, and T. H. Rieder, president of the company, has given permission for the erection of suitable bathing houses on his property along the lake shore above the beach for the accommodation of residents of Dalhousie Hall.

The Canadian Consolidated Rubber Co., Limited, Montreal, Quebec, has purchased a tract of land about 25½ acres in area in the neighborhood of the Delorimier race track, at approximately 33 cents a foot, where it expects to commence the erection of a new plant in the early spring to meet the increasing demand for its products.

The recently acquired building adjoining the Toronto branch of the Canadian Consolidated Rubber Co., Limited, comprises over 60,000 square feet of floor space. Among the improvements are show windows for the display of goods, lunch rooms for employes, and rest rooms for women workers.

Hugo Wellen, who was appointed acting treasurer of the Dominion Rubber System, Montreal, Quebec, in October, was elected treasurer at the November meeting of the directors. He succeeds Mr. Bimmore, who has removed to California.

Canada oversubscribed her recent Victory Loan by about \$200,000,000 in excess of the \$500,000,000 objective.

Private W. C. Dies, formerly head of the shipping department of The Dunlop Tire & Rubber Goods Co., Limited, Toronto, Ontario, lost both eyes and his right hand in the battle of Vimy Ridge and was awarded the Military Cross; but as soon as he heard that the subscription list of the Dunlop company was open for the Second Victory Loan he telephoned his personal subscription of \$200.

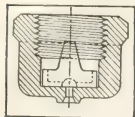
The Dunlop Tire & Rubber Goods Co., Limited, Toronto, Ontario, subscribed \$1,000,000 to Canada's recent Victory Loan, besides personal subscriptions made by officials and employes of the company. The factory and office staff also won an honor flag for obtaining subscription percentages set by the Victory Loan Committee.

Replete with information for rubber manufacturers—Mr. Pearson's "Crude Rubber and Compounding Ingredients."

New Goods and Specialties.

A SPRAY FOR ACIDS AND OTHER LIQUIDS.

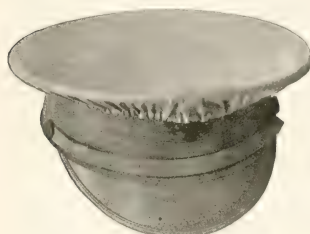
THE hard-rubber spraying attachment shown in the adjoining cut operates with water or other liquid under pressure to produce an extremely fine spray. Owing to the resistance of hard rubber to corrosive action, this sprayer is particularly adapted for atomizing such acids as hydrofluoric, etc. The nozzle consists of the inside and the cap which fits directly on the pipe. The inside part gives the liquid the necessary gyratory action to produce atomization or spray. Clogging is reduced to a minimum because the slots on the inside part are large compared with the nozzle orifice. This nozzle can be cleaned without removal from pipe. The construction can be varied to suit the requirements, and the nozzle works in any position. (Monarch Manufacturing Works, Inc., 3129 Emery street, Philadelphia, Pennsylvania.)



HARD-RUBBER SPRAY.

ANOTHER CAP COVER AND CHECKERBOARD.

Although an armistice has been signed, it is probable that there will be officers in uniform for some time to come, so

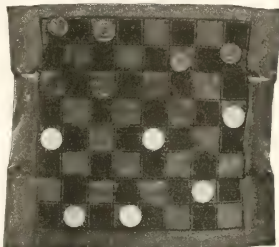


OFFICER'S RUBBER CAP COVER.

that another type of rubberized cap cover may not be amiss. As the officer is not allowed to carry an umbrella, such cap covers are an essential part of his equipment.

The one shown here is made of high-grade quality olive-drab rubberized material, silk-finished, light weight, and has an elastic inserted in the edge to facilitate adjustment over the cap. This cover is also made in the regulation khaki color.

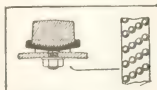
While the peace treaty is being prepared, the million boys "over there" will need something to do in spare moments and the familiar game of checkers in a new guise will find a welcome, as well as from other players on this side of the water who will appreciate a rubberized checker-board that can be rolled or folded into small space. This particular board is made of rubberized khaki material and is accompanied by 24 wooden checkers of contrasting colors. (Felsenthal Bros. & Co., 512-520 South Fifth avenue, Chicago, Illinois.)



RUBBERIZED KHAKEE CHECKER BOARD.

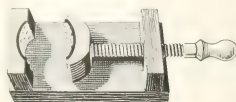
A PATENTED STUD FOR TRACTOR WHEELS.

A new device intended to be secured to the rims of agricultural tractor wheels so as to give them a grip on both soil and road, is the rubber stud of which a cross-section and drawing are shown herewith. Cylindrical pieces of solid rubber are vulcanized onto circular metal pieces having projections in bolt form underneath, thus making possible their application by any blacksmith and also allowing for replacement when worn. The metal base to which the studs are attached is adapted for attachment to rims of different widths. (Dunlop Rubber Co., 14 Regent street, London. United Kingdom patent No. 118,149.)

TRACTOR WHEEL STUD
OF RUBBER

FOR HOME CANNERS.

Against the time when fruit shall be ripe again and the housewife preparing it for winter use, somebody has devised a new kind of jar-holder, which, while simple in construction, is at the same time efficient. It is made entirely of wood.

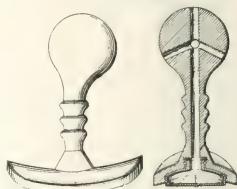


RUBBER-LINED JAR HOLDER.

The base is fastened a wooden block with a curved inner face to conform to the shape of a fruit jar. Opposite this block, attached to a screw, is an adjustable curved jaw by which the jar is held. The gripping elements are rubber-lined. (W. J. McCallum, Evanston, Illinois.)

COMBINED SUPPORT AND APPLICATOR.

The object of the instrument illustrated in the adjoining drawing is two-fold—to provide a support for protruding piles and, at the same time, an applicator of medicament to piles or hemorrhoids. The instrument is made of rubber, but when intended for use as a support, is made of harder or less pliable rubber at the base and ball, the neck being of more flexible rubber. The cross-sectional view shows the device as an applicator with a detachable medicament container inserted in the recess at the bottom. The bottom of the container is collapsible so that pressure on it causes portions of the medicated charge to be expressed at predetermined intervals. The containers are to be filled separately at the factory and sealed, thus providing sanitary means of application. The base of the instrument is so shaped as to prevent unintentional pressure on the base of the container. It is claimed for the invention, which has recently been patented, that it can be worn without discomfort or inconvenience. (John T. Landis, Nashville, Tennessee.)



RUBBER PILE SUPPORT.

"KOLD PROSSO" JAR RINGS ARE A NEW BRAND ADAPTED FOR COLD-process canning. (Smalley, Kivlan & Onthank, Boston, Mass.)

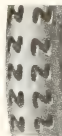
Some American Automobile Tire Treads.



U. S. Chain



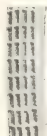
Federal Cord



Zoo-Zoo



Road King



Gridiron



Velvet



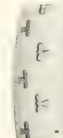
Autocrat



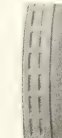
Dux

Victor
Springfield

Mason



Converse



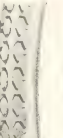
McLean-Bar



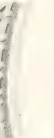
Superbar



Star



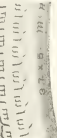
Uniformity



McGraw



Stronghold



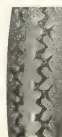
McNaull



General Cord



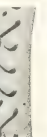
Knight



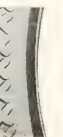
Angle



Dreadnaught



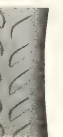
Granite



Mohawk



Thermoid



Woodworth



Firestone Cord



Firestone Cord



Kelly-Springfield



Thermoid



Marathon



General



Mason



Goodrich



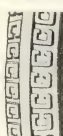
Hood



Falls



Delton



Gumples



McCreary



Wilson Vacuum

Mohawk
Keaton

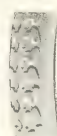
Reverse Cord



Mason 400



Smith



Hercules



Goodrich Cord



Keystone



Brunswick



National



Mafkonite



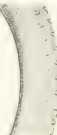
Combination



G. & J. Cord



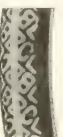
Century



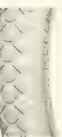
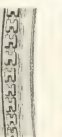
Stalwart



Hanes



Brunswick

Kelly-Springfield
CordHartford
Cord

General



Strongheart



Ericson



America



Racine

The Great Rubber Surplus.

THE belief that there will be 80,000 tons of surplus rubber in and about the Federated Malay States between the present time and June, 1919, naturally stirs the British planters and plantation shareholders. Personally we are of the opinion that this surplus will be absorbed before that time, and not only that but for the year 1920 so great will the world's rubber business be that manufacturers will be fearful of a shortage. Time will of course prove the truth or falsity of this prophecy.

To the pessimists, or perhaps the clear-sighted, come many remedies. The most popular which has been advanced from various sources is a sort of valorization plan. A writer to one of the London papers advocates a selling association thus:

I am not a selling agent and have no interest in sales, but I would suggest that a great obstacle to any arrangement would be removed by limiting the selling association to a term of five years and agreeing that the companies joining the association should continue existing emoluments to agents during that term. I would suggest a selling association with a capital in £10 shares, the capital to be issued to companies in the proportion of £1 for each cultivated acre. Of the capital £2 per share only to be called in calls of £1 each, the balance to remain as a guarantee. I would suggest an initial capital of £1,000,000, which could be increased as the number of members grew. The association would take delivery of the rubber of its members and either sell it, warehouse it, lend on it, or carry on any other usual business, etc., at ordinary rates. In addition, it should charge ½d. per pound, out of which the administration costs would cover any surplus profit accumulating for distribution at the termination of the association. The advantages of such an association would be so great that I am certain that any companies that did not come in at the beginning would later on be eagerly seeking membership. I would suggest that the Committee of Young Producers should lose no time in preparing a scheme and submitting it by circular to the London companies. The London "Statist" suggests a plan analogous to the Australian Zinc Producers' Association, Limited, thus:

The agency companies and administrative groups could vest their rubber selling and crop financing in it, the purchase considerations, as agreed upon, to be payable in debentures, preference or ordinary shares. Warehouses, wharves and other necessary adjuncts to be obtained and the facilities to be expanded as required. Thus would be constituted a considerable portion of the necessary fixed assets and good will of the undertaking on the selling end of the business. Assuming for the purpose of illustration that producers of a full crop-producing capacity of 100,000 tons per year would participate, a common basis for acquiring a share interest would have to be arrived at, say, perhaps 6d. per pound on the annual producing capacity, which roughly represents the funds required to finance production for three months at 2s. per pound. The aggregate sum would be £5,600,000. A company of individuals producing 250,000 pounds per year would take up £6,250 of, say, £1 shares. The corporation would purchase the rubber at an average price ruling for the year, charging a commission on a graduated scale per pound, rising with the average price paid. The better the average price, the higher the commission paid, the greater the benefit to the producers, and the higher the earning power of the corporation. Crops requiring to be financed in excess of the production covered by the actual funds at the corporation's disposal could be covered by bills and bankers' advances.

Whether any of these plans are carried out, certain it is that for a time at least, much plantation rubber must be stored, in fact is being stored. If it were upriver fine or coarse, we would know all about its keeping qualities in storage. But for plantation crepe prepared in a variety of ways, neither planter nor manufacturer has anything but judgment to go on.

Mr. Sidney Morgan of the Research Laboratory in Petaling, Federated Malay States, gives the following as his plan for preparing and storing rubber so that it may not deteriorate:

(2) Thorough drying of crepe rubber; and thorough drying and smoked curing of smoked sheets.

(3) In the case of crepe rubber it would be advisable to prepare only the thin variety so that drying can be seen to complete.

(4) In the case of smoked sheets they should be marked with a distinct ribbed pattern, preferably of the close-spiral type.

(5) All wooden boxes should be perfectly dry before use. As a regular precaution the wood should be placed in the sun for several days. The use of damp boxes is a frequent source of troubles.

(6) Packed boxes should never be placed on a cement floor. A wooden floor is advised and even then the boxes should rest upon beams or rails so that there is open ventilation between the floor and the bottom of the boxes.

(7) Boxes should be placed with a small space between them in all possible directions, so that the surfaces obtain the maximum ventilation.

(8) The building should be so designed as to permit of all windows being opened without the admission of direct sunlight. This can best be effected by means of verandas all round the building.

(9) If possible the floor of the building should be raised from the ground to the height of a bullock-cart or motor lorry. This will ensure better ventilation; and will facilitate easier handling of boxes from a loading platform.

(10) The building should have the best possible ventilation either by ordinary means (e. g., a good jackroof) or by mechanical devices. It should be a separate building and no moist rubber should be allowed to hang in the upper stories.

(11) Other factors such as the situation of the building, etc., will appeal to anyone who studies the question.

In reviewing all of the above they do not seem wholly sound, nor adequately to cover the ground. As some one has wisely said, the best place to store surplus rubber is in the tree.

As therefore England, France and the United States are planning cooperative farming, and economic growing and distribution of foodstuffs, why not apply the same system to rubber—cooperation?

Tapping carried out with wisdom and fairness would seem to offer a solution.



AMERICAN SOLDIERS LEARNING TO REPAIR TIRES IN THE MODEL FIRESTONE REPAIR SHOP AT AGRON, OHIO

Should be on every rubber man's desk—Crude Rubber and Compounding Ingredients; Rubber Machinery; Polyglot Rubber Trade Directory; Rubber Country, of the Amazon; and What I Saw in the Tropics.

(1) Correct preparation of the rubber.

News of the American Rubber Industry.

AN ACTIVE WORKER IN CONNECTION WITH THE WAR INDUSTRIES BOARD.

ONE of the men who is doing most valuable work for the Government, is J. C. Matlack, one of the assistants to Harry T. Dunn, chief of the Rubber and Rubber Goods Section of the War Industries Board. As a young man Mr. Matlack was employed by the Simons Hardware Co., St. Louis, Missouri, rising to be head of the bicycle and accessory department of that concern, after which he left to become eastern sales manager of the A. Fetherstone Co., Chicago, Illinois. On the organization of the American Bicycle Co. he was appointed purchasing agent for the more than sixty factories, and in 1901 was made the company's western sales manager.



J. C. MATLACK.

The following year he resigned and became president of the International Automobile and Vehicle Tire Co., Milltown, New Jersey. When this company was succeeded by the Michelin Tire Co., he was made vice-president and general manager, retaining those offices until 1911, when he joined the newly organized Ajax Rubber Co., New York City, as secretary and general manager. During the six years he was with the Ajax company the value of the business was multiplied many times. Mr. Matlack was elected vice-president of the American Writing Paper Co. in 1917, resigned during the present year, and returned to the rubber business, becoming president and general manager of the Globe Rubber Tire Manufacturing Co., of Trenton, New Jersey.

PERSONAL MENTION.

Frank R. Carroll has been promoted to the district management of The B. F. Goodrich Rubber Co., Akron, Ohio, in San Francisco. He was formerly manager of the Los Angeles branch.

H. L. Hall has been appointed branch manager at 1328 Michigan avenue, Chicago, Illinois, for The Swinehart Tire & Rubber Co., Akron, Ohio. He has been connected with the automobile and bicycle business for a number of years and for the last eight years has had charge of the western territory of the Troy Carriage Sunshade Co., Troy, Ohio, manufacturing automobile specialties.

Lewis E. Klug, formerly with the Victor Tire & Rubber Co., Springfield, Ohio, has been appointed factory superintendent of the Electric Rubber Reclaiming Co., Barberton, Ohio, succeeding J. F. Johnston, resigned.

J. S. Benner, secretary of the Electric Rubber Reclaiming Co., Barberton, Ohio, has been appointed general manager, also.

Garfield List recently succeeded S. S. Poor as district manager of the United States Tire Co., New York City, in Philadelphia, with headquarters at 329 North Broad street.

G. A. Binz, sales manager for the Yarnall-Waring Co., Chestnut Hill, Philadelphia, Pennsylvania, has transferred his headquarters to the company's New York office, at 90 West street.

R. H. Wilson has been appointed assistant to the president of the Walter A. Zelnicker Supply Co., St. Louis, Missouri, dealer in machinery, mill and factory supplies, etc.

E. O. Griffin, well-known in southwestern railroad circles, has been appointed representative of the Walter A. Zelnicker Supply Co., St. Louis, Missouri, at Houston, Texas, succeeding R. H. Wilson.

Ernest Newton, a salesman for the Sterling Tire Corp., Rutherford, New Jersey, in the Hartford, Connecticut, territory, has been appointed manager of the Hartford branch, succeeding W. H. Lacey, now in government service.

Julius Lichtenstein, president of the American Sumatra Tobacco Co., has been elected a director of the Keystone Tire & Rubber Co., New York City.

On and after January 1, 1919, Byron T. Mottinger, E. E., will be associated with the Quaker City Rubber Co., Wisconsin, Philadelphia, Pennsylvania, as chief engineer and master mechanic. He is now general superintendent of power of the Fort Dodge, Des Moines & Southern Railroad, Boone, Iowa.

TRADE NOTES.

The Republic Rubber Corp., Youngstown, Ohio, has acquired the entire assets of The Knight Tire & Rubber Co., Canton, Ohio, and has taken over the operation of the Knight plant. The selling organization of the Knight company will continue indefinitely under that name and the capital stock has been reduced from \$1,500,000 to \$150,000.

The Alling Rubber Co., Danbury, Connecticut, has removed from 264 to 268 Main street, where it has nearly double floor space and better shelving accommodations. The company intends to add new lines. It now deals in rubber goods, automobile tires and supplies.

The plant of the Rubber & Celluloid Products Co., 56 Ferry street, Newark, New Jersey, situated on Wilson avenue of the same city, which was recently destroyed by fire, will be rebuilt at an approximate cost of \$50,000. The new structure will be one and two stories in height, 42 by 390 feet. The officers of the company are: A. Albright, Jr., president; T. B. Denton, vice-president; T. M. Kays, secretary, and C. M. Freeman, treasurer. This concern manufactures the "Rubberest" brushes.

The Combination Rubber Manufacturing Co., Bloomfield, New Jersey, manufacturer of "Viking" tires and tubes and mechanical rubber goods, at the annual meeting of its stockholders on November 4, elected the following officers: William H. Servis, president; Horace T. Cook, vice-president; Fred L. Conover, treasurer; Frank W. Servis, secretary; Arthur R. Colvin, factory manager, and William A. Robbins, superintendent.

The Denver Rubber Co., 1645 Lawrence street, Denver, Colorado, western distributor for The B. F. Goodrich Rubber Co., Akron, Ohio, has four men—Ferguson, Davis, Cary and Holmes, its entire force of traveling salesmen—in service. The officers of the concern include R. A. Kincaid president and treasurer, and V. C. Wist, secretary. It was established in 1889.

The George W. Eno Rubber Co., Inc., has just moved into its new building at 1159-63 Post street, San Francisco, California, which will be the headquarters for its business north of Tehachapi. R. T. MacMillin, managing director, is in charge of this

territory. The company is the Pacific Coast representative of the Akron Rubber Mold and Machine Co., Akron, Ohio.

Brighton Mills, Passaic, New Jersey, have discontinued their New York office at 257 Fourth avenue, and hereafter will handle all business from their office at Passaic, New Jersey. The officers of the company are: William L. Lyall, president and treasurer; Harry V. R. Scheel, assistant treasurer; Thomas M. Gardner, secretary; and Timothy J. Kelly, superintendent.

The Sterling Tire Co., 234 West 55th street, New York City, has registered with the Secretary of State of New York and received authorization to do business in that State. The concern is a Delaware corporation.

The Owen Tire & Rubber Co. has removed its office from 1900 to 2336 Euclid avenue, Cleveland, Ohio, but correspondence should be directed to the factory at Bedford, Ohio.

The Manhasset Manufacturing Co., Putnam, Connecticut, manufacturer of tire fabrics and yarns, has recently completed a two-and-one-half-story addition, 60 by 60 feet, to its main mill, and will use it for plant extension in the general manufacture of tire duck.

The Eagle Packing & Rubber Co., Inc., 123 Chambers street, New York City, manufacturer of asbestos packings and mechanical rubber goods, has leased the second loft at the above address. H. W. Austin is president of the company and J. E. Paul is superintendent of production.

The rubber substitute and chemical business of the late George F. Lufbery, Jr., at Elizabeth, New Jersey, has been taken over by W. J. Moren, who has been in Mr. Lufbery's employ for the past eleven years. The business will be continued along the same lines as formerly.

The Cameron Machine Co., 51-61 Poplar street, Brooklyn, New York, has opened a new sales office and service station at 503 First National Bank building, Cincinnati, Ohio, in charge of Frank C. Risselt, who is well-known to the rubber trade.

The Guaranteed Tire Service Co., 241 Main street, Dubuque, Iowa, has changed its name to Tire Service Co. It has also discontinued acting as distributor for the Savage Tire Corp., San Diego, California, and is now exclusive branch distributor for the entire line of the Miller Rubber Co., Akron, Ohio, covering northeastern Iowa, southwestern Wisconsin and northwestern Illinois. A large tire-repair plant has been installed, which makes a specialty of retreading.

The Ehman Tire & Rubber Co., La Salle and 27th streets, Chicago, Illinois, has changed its name to the Inland Rubber Co., which name will be used in all business transactions on and after December 1, 1918.

GOODRICH IN CALIFORNIA.

M. D. Bixby was recently appointed manager of the Los Angeles, California, branch of The B. F. Goodrich Rubber Co., Akron, Ohio, controlling all Southern California and Arizona territory. Mr. Bixby has been with the Goodrich company since 1914 and previous to that time was with the Diamond Rubber Co. in Chicago. He has made the following appointments in his territory: L. E. Nollen, district superintendent of operations; E. G. Ketchum, manager mechanical sales; M. B. McKinsey, manager pneumatic tire sales; E. W. Perry, manager of tire truck sales; G. M. Gay, in charge of service department; J. F. Howard, manager of credit department; B. Schuttere, manager of traffic department, and E. Hegerling, manager of stock department.

PRODUCTION OF RUBBER IN FIJI ISLANDS.

The British Trade Commissioner to New Zealand, who has lately visited the Fiji Islands, reports that rubber cultivation is receiving much attention there, New Zealand farmers having started large plantations on Fiji lands of a suitable nature. Quantities of rubber of a very high grade have already been produced.

DIVIDENDS.

The Ajax Rubber Co., Inc., 1796 Broadway, New York City, has declared its quarterly dividend of \$1.50 per share, payable December 15 to stock of record November 30, 1918.

E. I. du Pont de Nemours & Co., Wilmington, Delaware, declared a dividend of one per cent, payable November 11, for the benefit of the United War Work Campaign, the checks being specially marked and the recommendation made that they be turned over directly to the fund by the recipients.

The General Electric Co., Schenectady, New York, has declared quarterly dividends of \$2 per share and two per cent in common stock at par, both payable January 15, 1919, to stock of record December 7, 1918.

The Mason Tire & Rubber Co., Kent, Ohio, on October 31, declared a six per cent cash dividend, payable at the rate of two per cent on the 20th of February, May, and August, 1919.

BOSTON TO SAN FRANCISCO LINKED BY MOTOR TRUCKS.

Two three-ton motor trucks of The Goodyear Tire & Rubber Co. recently made a successful journey from Boston to San Francisco and return, a distance of 7,763 miles. The freighters left Boston on September 1, with a cargo of airplane tires for the military authorities at San Francisco, and completed the 3,700-mile run in 21 days, allowing a one-day stop at Akron, Ohio. The trucks followed the Old Post Road to New York, then the Lincoln Highway to San Francisco, by way of Philadelphia, Pittsburgh, Akron, Fort Wayne, Cedar Rapids, Omaha, Cheyenne, Salt Lake City, Carson City, Sacramento and Stockton.

From San Francisco the trucks proceeded to Los Angeles, by way of Stockton, Fresno and Bakersfield, and thence over the National Old Trails Route, through the Mojave Desert and Needles, California, to Phoenix, Arizona, where the Goodyear



BOSTON—SAN FRANCISCO FREIGHT TRUCKS.

cotton plantation is located. Here a load of baled cotton was taken on for delivery to the Goodyear Cotton Mills, at Goodyear, Connecticut.

Doubling back to Ash Fork, Arizona, the trucks picked up the National Old Trail and continued on through Flagstaff, Albuquerque, Santa Fe, Las Vegas, Trinidad, Kansas City, St. Louis, Indianapolis, Dayton and Columbus to Akron, and from Akron to Boston over the regular route through Pittsburgh, Philadelphia, and New York.

The trucks were equipped with 44 by 10-inch all-weather cord tires on the rear wheels and 38 by 7-inch, rib-tread tires on the front wheels.

RUBBER PLANTING A FAILURE IN HAWAII.

Rubber planters in Hawaii who some years ago took up Ceara rubber cultivation in vigorous fashion, are being disappointed in their expectations. In fact, a very great part of the plantations has already been abandoned or planted to other crops.

FIRE LOSS EXPERIENCE IN RUBBER FACTORIES.

IN the October issue of the "Quarterly of the National Fire Protection Association" the fire experience of rubber factories is reviewed. The study includes all the fires in rubber works that have been reported to the association, and practical conclusions deduced as follows:

By far the largest causes of rubber factory fires are static electric sparks and the ignition of inflammable vapors, the two being so closely associated that it is difficult to draw any hard and fast line between them. It is interesting to note how the record tallies with the investigations of F. J. Hoxie as to the periodicity of fires due to static electricity. A tabulation, according to months, of the 73 fires of this general character included in the record shows the following:

No. of fires.	No. of fires.
January 10	August 2
February 21	September 2
March 8	October 5
April 13	November 6
May 1	December 1
June 0	Exact date unascertained... 1
July 0	Total 73

These figures, which were obtained from a wider geographical field, show:

Mr. Hoxie's detailed and comprehensive studies in New England factories, differ somewhat from his results in respect to the distribution between the months from November to April, but they amply confirm his general conclusions regarding the increased incidence of such fires during the winter months. The problem of grounding, and keeping effectively grounded, all machines at which static electricity is likely to be generated has not yet been completely solved, though it would appear that in some factories the hazard from this source has been much more effectively taken care of than in others. Inasmuch as these fires are frequently attended with serious injury to the employee, and occasionally loss of life, it is an obvious duty of good management to take every possible precaution to safeguard this hazard. Use of the Chapman neutralizer and of appliances for humidifying the atmosphere and thoroughly grounding—in some cases of the employee as well as the apparatus—are the most generally recognized remedies.

Hazardous processes like spreading and cement mixing should be conducted in properly isolated buildings or rooms, and material waiting to be spread should not be kept in a location to which a fire originating at the spreader machine may easily communicate. To store valuable goods underneath rooms in which spreading is done is also bad practice, and several instances have been reported involving heavy damage when water used to extinguish a spreader fire ran down into floors below. Naphtha, gasoline and benzine should, of course, be stored in an approved manner, and the utmost care is necessary in the matter of lighting in the presence of inflammable vapors. If it is necessary for a watchman to pass through the cement-mixing room, he should not be permitted to use an ordinary lantern, and while an ideal condition might be the complete prohibition of artificial light in buildings or rooms in which hazardous liquids or solutions are stored, it is certainly better to have a well installed system of electric lamps with keyless sockets and vapor proof globes than to omit all provision for illumination and use open lights in times of emergency when the factory may be in operation at night.

On the whole, the not unsatisfactory character of the record emphasizes the fact that the chief cause of the fire waste is not the presence of hazards too severe for human control, but a false sense of security in relation to hazards that do not seem severe enough to be worth the exercise of ordinary human intelligence to combat.

LONG-STAPLE COTTON IN INDIA.

Cotton growing and cotton weaving have been important factors in the remarkable industrial development of India, which has become one of the great surprises of the war. During the fiscal year ended last March, production in the cotton-weaving industry rose by more than 500,000,000 yards, or nearly 50 per cent, above the pre-war average, while imports by sea fell by

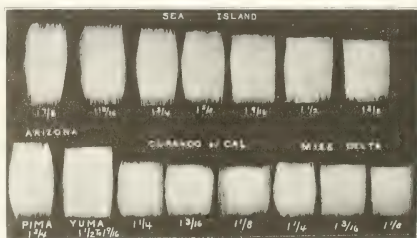
1,076,000,000 yards, or 41 per cent, to 1,055,000,000 yards.

All Indian cotton is of the short-staple variety, and this has tended to restrict weaving to coarser grades of cloth, but American long-staple cotton is now being introduced with promise of some success.

LONG-STAPLE COTTON VARIETIES GROWN IN AMERICA.

OF all the long-staple cotton varieties grown in the United States and the adjacent islands Sea Island is by far the best. There are three grades—Carolinas, Floridas and Georgias—ranking in the order given. The yield of seed cotton is 500 pounds and that of lint cotton is 125 pounds to the acre, the bales weighing 400 pounds. Average length of the staple is 1 3/4 inches, while

On account of the damage by the boll-weevil and unfavorable



Production of cotton.

SEA ISLAND AND AMERICAN LONG-STAPLE COTTON.

weather conditions the 1918 crop will be small. The ginner's report shows 24,145 bales of Sea Island cotton ginned up to November 21, 1918, compared with 68,229 bales for 1917.

Arizona cotton grown in the Salt River valley is destined to supplant Sea Island grades and, for that matter, Egyptian-grown cotton as well. The local varieties are known as Pima and Yuma cotton, which were developed from selected Egyptian cotton seed. About 75,000 acres of these two varieties will be planted this year, the yield being about one bale of 500 pounds to the acre. The length of the Pima staple is 1 3/4 inches and that of the Yuma variety ranges from 1 1/2 to 1-7/16 inches. Last season's crop was 14,200 bales, while the present season's crop is estimated at 40,000 bales. About 30 per cent of the cotton grown in the Imperial Valley of California is the long-staple Durango variety. It is estimated that 35,000 acres of this cotton will be planted this year. The production is about three-quarters of a bale of 500 pounds to the acre. The staple is from 1-3/16 to 1 1/4 inches long. Last year's crop was 13,000 bales, no figures being available for the present season. The long-staple cotton that is grown on the low lands of Alabama, Mississippi, Louisiana and Arkansas is known as "Peelers," "Benders," "Allen," etc., these terms relating only to the length of staple. The production of this particular variety for 1917 is estimated at 75,000 bales of 500 pounds. The length of the Mississippi Delta staple varies from 1 1/4 to 1 1/2 inches. No exact figures are obtainable with regard to the production of American long-staple cotton. However, the Bureau of Crop Estimates has supplied the following estimated production for last season's crop:

	Mississippi.	Louisiana.	Arkansas.	Totals.
Length, inches.	Bales.	Bales.	Bales.	Bales.
From 1 1/4 to 1 3/4	401,000	1,000	500,000	902,000
Over 1 3/4	45,000	5,000	100,000	150,000
Totals	449,000	26,000	234,000	709,000

The Editor's Book Table.

NINETEENTH YEAR BOOK, 1918. THE RUBBER ASSOCIATION of America, Inc. Van Nostrand Avenue, New York City. (Paper cover, octavo, 120 pages.)

THIS annual publication follows its predecessors closely in style and contents, giving in well-arranged form lists of officers, directors, standing and special committees, and membership, the constitution and by-laws, and the reports of officers and chairmen of the various committees and trade divisions. There are also included the addresses delivered at the annual dinner last January, as well as half-tone illustrations from photographs taken at various meetings of the association. From the secretary's report we learn that there are 315 firm members and 249 associate members, a larger membership than ever before in the history of the association. The treasurer's report shows the finances to be in excellent condition.

CHEMICAL ENGINEERING CATALOG, THIRD ANNUAL (1918)
• Edition. The Chemical Catalog Co., Inc., New York. (Cloth, 9 by 12, 836 pages. Price, \$5.)

The third annual edition of this valuable reference work is intended for the use of chemical engineers, buyers and others seeking information on chemical and metallurgical equipment, machinery, chemicals and supplies. It is a collection of condensed catalogs and indexed data compiled by the publishers under the supervision of a special committee representing the American Institute of Chemical Engineers, American Chemical Society and the New York Section of the Society of Chemical Industry. Free distribution of the book is limited to chemical engineers, superintendents, buyers and others in responsible charge in manufacturing establishments, and to chief chemists and to departments of chemistry in universities, colleges and technical schools.

PRACTICAL INSTRUCTION ON ELECTRICAL FIRE HAZARDS.
By Thomas Henry Day. The Insurance Institute, Hartford, Connecticut. (Pamphlet, 16mo, 120 pages, illustrated.)

This is a series of lectures given before the Insurance Institute by Mr. Day of the New England Insurance Exchange. It treats of the proper installation and the later inspection of electric wires and appliances, shows the causes of fires through overheating, short-circuiting, electrolysis, grounding of current, etc., and the results of non-compliance with the necessary rules for safe installations. The book contains many diagrams and half-tones from photographs of faulty work and the fires or leaks resulting therefrom.

COMMUNICATIONS OF THE NETHERLAND GOVERNMENT INSTITUTE for Advancing the Rubber Trade and the Rubber Industry. Part VII. By Dr. G. van Ierssen, translated by J. C. van Marken. International Association for Rubber Cultivation in the Netherlands Indies, Delft, Holland. (Paper covers, 39 pages.)

This is the final installment of English translations of a Dutch work published in 1916. It consists of chapters on "Porosity of Vulcanized Rubber" and "Remarks on the Nature of the Vulcanization Process." Much valuable information has been made available to the American and English rubber trade through the translation of the original Dutch report of the institute's original investigations on the characteristics of crude rubber, methods for its valuation and the chemical and physical changes induced by vulcanization.

A. S. T. M. STANDARDS, 1918. PUBLISHED BY THE AMERICAN Society for Testing Materials, Philadelphia, Pennsylvania. (Size, 6 by 9 inches, 968 pages. Price \$9.)

This compilation embraces a large number of standard specifications, tests, methods, definitions and recommended practice of interest to engineer and chemist. The specifications cover ferrous and non-ferrous metals, cement, lime, gypsum and clay products

and miscellaneous materials, among which rubber is included. Rubber manufacturers, and rubber chemists will find data of interest in the specifications on cotton rubber-lined rubber hose and air line hose for pneumatic tools; in the tests for cotton rubber-lined hose; standard methods for analysis and test of white pigments; dry red lead; coal; yellow-orange, red and brown pigments containing iron and manganese.

GIDS, VOOR BETREKKINGSOFFERENDEN IN DE CULTURES TER Oostzee van Sumatra. Dr. Ch. F. Haje, Middelburg, Holland. Publisher, J. H. de Bussy, Amsterdam, Holland. (Paper cover, 75 pages, map, 8 full-page illustrations.)

The object of this work is to acquaint young Hollanders intending to seek positions on plantations on the East Coast of Sumatra with their future surroundings and, to a certain extent, with their prospects. After a brief historical review and sketches of Belawan and Medan, a clear summary of the various products and the work connected therewith is given. There is a chapter on Eastern labor, the manner of recruiting, and hints regarding the attitude to be adopted toward coolies of different nationalities. Another chapter deals with the Occidental staff, salaries, promotion, etc., and points out various questions to be considered by married men. The program of the first course in Indology, instituted by the Koloniaal Instituut, Amsterdam, recommended to the prospective assistant, completes this useful little book.

NEW TRADE PUBLICATIONS.

IN LINE WITH THE NATION-WIDE MOVEMENT FOR THE CONSERVATION of pneumatic tires, the Miller Rubber Co., Akron, Ohio, has recently issued a new tire repair book designed for the use of the car-owner. It takes up such repairs as can be made at home, but discourages the undertaking of extensive repairs where crude workmanship may ruin the tire. The actual experience of the Miller tire department has been drawn upon for the information contained in the publication. Illustrations are included, a series of practical hints and suggestions concerning tire trouble, and a comprehensive discussion of rims and the application of tires on different types of rims.

* * *

"INDUSTRIAL ATHLETICS," IS THE NAME OF THE EIGHT-PAGE monthly now being issued by the recently formed American Industrial Athletic Association, mentioned in our issue of September 1, 1918. An account of the first athletic meet, with illustrations, is given, as well as articles on the value of athletics, women in war work, how sports help industrial production, etc. The organization is strictly limited in its membership to amateur performers. Extracts from the constitution and a membership application blank complete the first number of the publication. Its address is Box 277, Goodrich Station, Akron, Ohio.

* * *

"REGULATIONS GOVERNING THE PRODUCTION OF RUBBER Products," Issue No. 1, October 1, 1918, that were superseded by Issue No. 2, November 1, 1918, have both been issued in pamphlet form by The War Service Committee of the Rubber Industry and were published in full in THE INDIA RUBBER WORLD, November 1, 1918.

* * *

"THE GRACE LOG" IS THE TITLE OF THE HOUSE-ORGAN OF W. R. Grace & Co., Hanover Square, New York City, bankers, importers of crude rubber, and other products. The publication is printed monthly on first-class stock, in pamphlet form, seven by ten inches, with paper covers, and contains 48 pages in English and Spanish. The first number was issued in April and contained

pictures of the 194 employees of the company who had at that time entered government service. Later issues have contained portraits of officers of the company and the new line of steamers operating in combined passenger and freight service to ports on the west coast of South America, the first to run to those ports under the Stars and Stripes.

THE ALTENBURG TIRE EQUIPMENT CO., DAVENPORT, IOWA, HAS issued an attractive 40-page illustrated catalog of tire repair equipment for all requirements. The Altenburg process of re-treading is featured with detailed description and numerous illustrations.

THE OBITUARY RECORD.

SUCCESSFUL AND RESPECTED RUBBER RECLAIMER.

ABRAHAM MARCUS, treasurer and general manager of the Somerset Rubber Reclaiming Works, East Millstone, New Jersey, passed away on November 1, 1918. He was born in Dorpat, Russia, September 30, 1883, the son of the late Samuel and Sarah Marcus, with whom he came to this country in 1896.



ABRAHAM MARCUS.

He worked in a shirt factory and at the expiration of four years had saved enough money to go into the junk business at Perth Amboy, New Jersey, where he remained for seven years, finally going to New Brunswick, New Jersey, where he became a partner in the New Brunswick Iron & Metal Co., which business he was interested in at the time of his death.

In 1910 he founded a corporation under the name of Somerset Rubber Reclaiming Works, with a factory at East Millstone, New Jersey, of which corporation he was treasurer and general manager from the time of its origin until his demise. Under his management this concern has become one of the most progressive of its kind in the United States.

During his régime there were never any labor troubles in the factory, as all the employees were contented with their lot, since they found in their general manager a man to work for who understood their position, wishes and desires. It was this human element in Mr. Marcus that made him respected by all with whom he came in contact.

As a philanthropist he had not an equal for a man of his means, and the many unmentioned deeds of charity performed by him are a touching testimonial to his exceptional kindness. There is hardly an organization or institution of a charitable or semi-charitable character that did not count him among its most generous patrons.

He was president of the New Brunswick Lodge, I. O. B. A.; chairman of the Religious Committee and president of the Sons and Daughters of Zion; a former vice-president of the Congregation of Ahavas; trustee of the Congregation of Anshe Emes; national director of the Rabbinical College of New York; former vice-chancellor of the Knights of Pythias; member of New Brunswick Lodge, B. P. O. E.; life member of the American Red Cross Society; member of the United States Chamber of Commerce, and a member of The Rubber Association of America, Inc.

He was ever preeminently identified with every war relief movement, and his mite was always cheerfully and ungrudgingly given whenever he was called upon.

Mr. Marcus was known throughout the rubber industry of the

United States and Canada, and the trade has lost a successful and respected member.

MAKER OF RUBBER SUBSTITUTES AND CHEMICALS.

George F. Lufbery, Jr., the well-known manufacturer of rubber substitutes and chemicals for the rubber trade, died at his home in Elizabeth, New Jersey, last month, aged 43 years.



GEORGE F. LUFBERY, JR.

Though born in France, Mr. Lufbery was of American parentage, and his father, the late George F. Lufbery, was a pioneer in the manufacture of rubber substitutes, the firm being known as Lufbery & Chardonier, with factories at Chauny, France. When a youth the son spent a winter at a Florida resort, and while there decided to complete his education in the native land of his parents, entering and later graduating from the Indiana Normal College at Valparaiso. Entering business, he developed a good

trade in the products of his father's factory in France, which establishment, however, was totally destroyed during the German invasion. Nothing daunted, he equipped a factory at Elizabeth, New Jersey, and continued the manufacture of rubber substitutes and chemicals for the rubber trade.

Mr. Lufbery was intensely loyal and active in the various war relief campaigns. He was also a member of the local State Militia Reserve. Indeed, it was the performance of his duties as such that cost him his life. At the time of the disastrous South Amboy munition plant explosion he reported for duty at the armory and there contracted a cold that resulted in pneumonia.

Mr. Lufbery was treasurer of the Society for the Study and Prevention of Tuberculosis; a member of the Young Men's Christian Association; a trustee of the Park Methodist-Episcopal Church, and president of the Forum connected with that congregation. The Chamber of Commerce of Elizabeth, New Jersey, adopted resolutions expressing regret at the loss of so valued a citizen.

He is survived by his widow; also by a brother and sister residing in Paris, France, and a step-mother living in Lawrenceville, New Jersey. He was also a first cousin of the late Major Raoul Gervais Lufbery, the American ace, whose death in the French aviation service was recorded in THE INDIA RUBBER WORLD of June 1, 1918.



SUMMER TOUR OF THE AKRON BOY SCOUTS.

RUBBER TRADE INQUIRIES.

THE EDITOR OF THE INDIA RUBBER WORLD:—I am writing you to-day because of the trade, but because of the possibility that additional information may be furnished by those who read them. The editor is therefore glad to have those interested communicate with him.

(675.) An inquiry has been received for the names of concerns manufacturing machines for fastening metal buttons on raincoats.

(676.) A subscriber desires the addresses of manufacturers of machinery for cutting rubber bands from old inner tubes.

(677.) A subscriber requests the addresses of manufacturers of gasket-cutting machines.

(678.) A request is made for the address of concerns dealing in burrs or bushings for tank balls.

TRADE OPPORTUNITIES FROM CONSULAR REPORTS.

THE EDITOR OF THE INDIA RUBBER WORLD:—I am writing you to-day because of the trade, but because of the possibility that additional information may be furnished by those who read them. The editor is therefore glad to have those interested communicate with him.

(27,613.) A company of importers in Japan wishes to be placed in communication with American exporters of raw rubber.

(27,618.) A company in South Africa would like to secure an agency for the sale of motor car and cycle accessories.

(27,620.) A firm in France wishes to secure an agency for the sale of rubber goods. Cash will be paid. Correspondence should be in French.

(27,622.) A firm in Cuba desires to buy large quantities of automobile accessories and to act as Cuban representative for the manufacturers.

(27,625.) A member of a firm in South Africa, who is at present in the United States, desires to secure an agency on a commission basis for automobile tires and accessories.

(27,631.) A man from Guatemala, who is in the United States for a short time, desires to secure representations for automobile accessories. Cash will be paid. Correspondence may be in English.

(27,634.) A Belgian firm in India wishes to secure an agency for the sale of motor-car and cycle accessories. Payment will be made through local bank.

(27,638.) A man in France wishes to secure an agency for the sale of motor-car supplies. Correspondence should be in French.

(27,640.) An agency is desired by a man in France for the sale of motor-car accessories. Correspondence should be in French.

(27,665.) A firm in Spain desires to secure an agency for the sale of artificial soles. Payment will be made ninety days after receipt of goods. Correspondence may be in English.

(27,683.) A company in Chile wishes to represent American manufacturers and exporters of carriage, wagon and automobile supplies and specialties. Willing to pay cash with order, to open letter of credit, to place order through New York export house, or to pay drafts drawn on them in Chile through local banks.

ADJUDICATED PATENTS.

(U. S. C. C. A. III.) The Sheaffer patent, No. 1,118,240, for improvements in attachments for fountain-pens, consisting of a spring-means arrangement within the casing to lift the presser-bar in a fountain-pen, independent of the compressible reservoir, and firmly holding lever in open or closed position. Held valid, showing invention, and claims 1 and 2 to have been infringed. Barrett v. Sheaffer, 251 Federal Reporter, 74.

(U. S. C. C. A. III.) The Gill patent, No. 1,188,370, for improvements in elastic packing-rings, and Patent No. 1,210,371, for improvements in processes of making packing-rings. Held valid and infringed. Bletner v. Gill, 251 Federal Reporter, 81.

REBUILT TIRES AND CONSERVATION.

THE extravagance and wastefulness of the American public have been recounted so often of late that further comment on the subject can be of little interest unless it refers to unusually flagrant cases. And there is such a case that is of interest to the rubber industry. This has reference to the extravagance shown by a great number of automobilists in prematurely dis-

carding tires that have been discarded and which should have been used still further after proper repairing, is really enormous. The automobilist who would certainly have a torn suit repaired and continue wearing it is usually utterly indifferent to a worn and rotten in his automobile tire; and it so happens that the average tire costs the same as the average suit of clothes.

As for this wastefulness; for instance, ignominy, carelessness or indifference. Also, until recently, the means for properly repairing automobile tires were not within the reach of a great number of automobilists, especially in the

The net result of the situation outlined above is that there is to-day among the discarded automobile tires in the hands of the scrap dealers a very appreciable percentage of tires which, with proper manipulation, can give a great deal of additional service. And this reutilization can be done at a cost which figures out at a lower cost per mile, on the mileage still obtainable, than the cost per mile on new tires.

The retreading or rebuilding of prematurely discarded auto tires is a most fertile field for the opportunist. The various elements to be conserved are, especially at this time, exceedingly important. The importance of the three great elements speak for themselves—fabric, crude rubber and labor.

It is especially interesting to note that the conservation of these damaged, but not worn out tires is in striking contrast to the normal utilization of scrap tires. Normally these are reclaimed, and although certain important results are obtained from this process, nevertheless it is almost entirely a destructive process. It destroys practically all of the important elements which are conserved by the constructive or rebuilding process.

Retreading or rebuilding scrap auto tires has been practiced for some years. Its scope, however, has been greatly limited for various reasons, one of which is that the business has not been conducted on a scale which could conserve the great number of tires that should be conserved.

The discarded tires and the few raw materials needed being available, it is up to the manufacturer to make and market on a large scale an honest rebuilt tire.

INTERESTING LETTERS FROM OUR READERS.

MORE ABOUT THE AMERICAN RUBBER TRADE.

DEAR SIR:—The leading editorial in your October issue has just reached me. He assured that the rubber trade in this country will be in heavy accord with what you say regarding the perfectly unjustified insinuations appearing in certain of the British financial papers. I am confident that all those of us who have any knowledge of the trade with America speak in the highest terms of the fairness of our friends on your side.

The remarks you quote from "Truth" were exceedingly offensive. Needless to say, they were equally misleading as to facts, and in spite of the letter I addressed to the Editor, a copy of which I sent you in my letter of September 3 I was unable to obtain anything more than a half-hearted withdrawal.

I thank you heartily for your editorial, and can assure you without hesitation that it is entirely in accord with the feelings and beliefs of the rubber trade here who have looked upon these offensive insinuations with the contempt they deserve.

Yours faithfully,

E. STEVENSON.

London, England.

THE RUBBER TRADE IN AKRON.

By a Special Correspondent.

IN November, The B. F. Goodrich Co., Akron, Ohio, made the following announcement:

During the past year the many unusual demands, due largely to war conditions, including the patriotic subscriptions to Liberty Loans and War Savings Stamps and the generous contributions to the various war activity funds, have created a situation which this company has already recognized in its payment of wages to its employes on the factory payroll and which it feels equally bound to recognize in its payment for services to salaried employes.

Each salaried employe will, therefore, receive on December 1, 1918, additional compensation for services rendered and to be rendered, equal to 25 per cent of the total salary paid to each such employe during the year 1918.

Since the beginning of the war, Goodrich employes have "stuck on the job" as well as contributed 3,800 men to the colors. The action of the company in voluntarily giving the bonus announced means the distribution of at least \$2,000,000, and it applies not only to salaried employes in the Akron factory, but also to those in the field force.

Many employes are planning to use the bonus to pay up the balance due on their Liberty Bonds, some are going to put it in the bank, some are going to purchase Goodrich stock; but all are going to do something worth while with it, without question.

* * *

The B. F. Goodrich Co., Akron, has made the following appointments: C. H. Wheeler, formerly chief supervisor of production, in charge of all pneumatic tire production; I. R. Renner, formerly chief supervisor of construction, in charge of pneumatic tire construction and quality; J. T. Johnson, Jr., manager of experimental tire department.

Misses Ruth and Mary Sterley, two of the Goodrich nurses whose pictures appeared in *THE INDIA RUBBER WORLD* November 1, 1918, are now in France.

Miss Mary Stevenson, another Goodrich nurse, is planning to enter Red Cross service.

New training quarters for athletes of The B. F. Goodrich Co., Akron, were opened late in October, adjoining the rooms occupied by the Goodrich tire department. Athletic equipment of all kinds has been installed. The rooms are open to all Goodrich men who secure a permit from Director Connelly for the use of them.

* * *

The Mason Tire & Rubber Co., Kent, has been making large shipments of rubberized raincoats to the Government on contracts placed about two months ago. Five weeks after the contract was signed, the company had taken over a large unused plant, equipped it completely, and commenced deliveries at the rate of 2,000 coats per week. This number has since been increased. The raincoat plant will be maintained regardless of war work.

* * *

The Swinehart Tire & Rubber Co., Akron, is adding to its plant a two-story, reinforced-concrete brick-front building, 50 by 167 feet, to be used for vulcanizing and storage purposes.

* * *

The Electric Rubber Reclaiming Co., Barberton, is now manufacturing rubber heels and fiber soles, rubber stair-treads, door mats and matting, and sheet packing, besides its regular line of products.

* * *

The Columbian Tire & Rubber Co., Columbiana, has increased its capitalization from \$300,000 to \$800,000 comprising \$500,000 common stock and \$300,000 preferred.

The Williams Foundry & Machine Co., Akron, manufacturer of tire-building and repair equipment, including all kinds of the necessary tools, presses, and vulcanizers, has just completed its new office building, besides other recent additions to its plant.



PLANT OF WILLIAMS' FOUNDRY & MACHINE CO.

The company was reorganized a year ago and since that time has greatly increased its manufacturing space, facilities, and volume of business. It completely equips tire-building factories as well as making the requisite tools and machinery.

* * *

John C. Reich has been appointed to fill the position formerly occupied by Robert E. Lee, now in government service, as superintendent of labor for the Firestone Tire & Rubber Co., Firestone Park, Akron. Mr. Reich comes from the Western Electric Co., Chicago, Illinois, where he gave considerable study to industrial development, health insurance, labor conditions, and kindred subjects. His training has particularly fitted him for his present position.

* * *

Miss Laura Sweeney, of the factory hospital of The Goodyear Tire & Rubber Co., is the first Goodyear nurse to be assigned to an overseas unit of the United States Army Medical Corps. She recently left Akron for New York City, to prepare for her trip to the war zone.

Miss Gladys Halford, another Goodyear nurse, recently left for California, there to await the sailing of the Red Cross vessel on which she expects to go to Siberia.

THE RUBBER TRADE IN BOSTON.

By Our Regular Correspondent.

THE abrupt cessation of hostilities abroad and the probable ending of the war have brought about some marked changes in rubber manufacturing establishments where war materials were being made. As a rule the Government has shown a disposition to be quite fair in regard to contracts, and while expressing a desire that the manufacturers should accept cancellations, is endeavoring to have them do so without detriment to the industries, or any loss on material in process of manufacture. The production of such articles as gas-masks, however, the need of which, it is hoped, will nevermore be realized, has been abruptly stopped, and in them rubber tubing and elastic web were used, so the cancellation affects factories making those parts. The clothing makers are curtailing production, and possibly have ceased cutting new fabrics, though finishing all garments which were in progress. The tire manufacturers are allowed an increased production for civilian use. The footwear manufacturers are enabled to furnish boots for their regular trade, an accomplishment not possible while the Government demanded their full boot output for the soldiers.

* * *

When A. M. Paul purchased the business of the Davidson Rubber Co. several years ago, the catalog of its products made a goodly volume, so great was the number and variety of the goods manufactured. To-day a little 24-page pamphlet, small enough to go in an ordinary-size letter envelope, is sufficient to picture, describe and price the lines of goods now produced. Concentration and specialization take the place of unlimited

variety, and with the manufacture of a small number of items commanding a large sale, the business has been so systematized that the income has shown a remarkably large increase, though the assortment is reduced to 20 per cent of the previous output. As an example of the concentration it may be mentioned that where formerly more than forty varieties of water bottles and fountain syringes were listed, now only two styles of each are made, only two styles of bulb syringes, and two kinds of nipples, of one color only. The same simplification applies to tobacco pouches, ice caps, etc., and the house has discontinued special markings and individual labels for jobbing or retail customers. The business dates back to 1857, and the present structure, (or part of it), was built 50 years ago, yet when one goes through the factory he finds all the machinery and equipment of the latest, another point which makes for efficiency, and this, having its influence on the quality of the output, is an added cause for an increase, within a comparatively short time, of over 50 per cent in the annual business done by this company.

* * *

It will be remembered that C. J. Bailey, the proprietor of the longest established rubber store in this city, died last April. The business has recently been incorporated as the C. J. Bailey Co., with a capital of \$50,000. The officers are H. E. Bailey,



M. S. LAWRENCE.

president; Leah Bailey, clerk, and M. S. Lawrence, treasurer and general manager. The two first are the son and daughter of the late Mr. Bailey. Mr. Lawrence has been associated with Mr. Bailey's business for more than two score years, having started with him in the dry goods business in Lynn, occupying an important position when Mr. Bailey established the lace business in Boston, and was for two years a lace buyer. When Mr. Bailey's rubber brushes and tires gained prominence,

Mr. Lawrence opened a branch house in Montreal, Quebec, and later, for two years managed the London, England, and Paris, France, houses of the concern, with residence in the former city. Of late years he has been Mr. Bailey's right-hand man in the Boston store, and the decision of the heirs to place him in charge of the business is a wise and proper one.

* * *

The Clark Rubber Manufacturing Co. reports a constantly increasing business in its specialty of rubber heels, and while, in the last few months it has been difficult to fill all the orders coming in, the prospect is for a better source of labor supply, which will enable the company to keep up with the demands of the trade.

* * *

The "Hood Arrow" is a neat, newsy publication issued semi-monthly by the service department of the Hood Rubber Co., Watertown, and sold to the employees at one cent per copy. The November 15th issue contains a list of all the employees of that company who have entered the Army or Navy, with each individual's latest address, thus giving their fellow workers the opportunity to send Christmas greetings. It is a long list, nearly nine pages, though the last page gives only the names and departments of those who had not sent their addresses. An interesting war-time item, headed "How War Changes Destinies," reads as follows:

A stranger in the person of Arved Alex secured employment here several months ago. He was assigned to the Tube Room, Tire Bldg. Arved was a bright blond man of 28, educated for 10 years in the best colleges in Europe. He spoke five languages and had a large account in a Somerville bank. Recently Arved caught the "flu," pneumonia developed and he

died. His uncle came here to see Mr. Dwyer and explained why the young man was working here. "Arved," he said, "was superintendent of a rubber concern as large if not larger than the Hood; but when Germany tried to induct him into Service he fled the country by way of Siberia, whence he came to America."

* * *

The Boston Rubber Shoe Co. has been making over 4,000 pairs of hip rubber boots a day for the United States Government, and because of this has been unable to fill civilian orders for its regular trade. In this respect it is in the same position as all other rubber footwear manufacturers. On account of the armistice and its expected culmination in restoring peace in Europe, it is more than probable that present boot orders will be cancelled, and thus the boot makers will be available for filling the civilian demand.

* * *

The L. J. Mutty Co. has increased its trade in automobile top fabrics and upholstery fabric remarkably in the last few years. It is furnishing large amounts of its top fabric to the Government to equip its tractors. The foreign business of the concern has increased 1,000 per cent since the war started, and extends not only to Europe, but to South America, the Philippines, Malaysia and Australia. This in part is caused by the government regulations that only one in four automobiles exported may be furnished with a top. This resulted in a big demand abroad for top fabrics, which demand this house has specially catered to, with the result that the "Dridek" trademark of the company's goods is becoming well-known in foreign countries.

* * *

Fred T. Ryder, of the Rinex Sole Division of the United States Rubber Co., has been covering some of his territory by automobile. Last month he had some strenuous experiences with muddy roads. Once he was stalled for several hours on a short stretch of unpaved highway on the State road between Brunswick and Gardiner, Maine. Yet even at that, he can hardly appreciate the mud about which his son writes in describing his experiences in the 26th Division "over there."

* * *

The new mill about to be erected by Everlastik, Inc., in Chelsea, was intended primarily for the manufacture of non-elastic webbing for war purposes. However, with the conclusion of the war it is believed that the demand for the goods of this enterprising concern will be so increased that the new mill will be fully occupied on its completion.

* * *

The newly organized Citizens National Bank of Boston, which will open for business early this month, has a strong directorate including several prominent business men. The rubber business is represented by Captain Francis H. Appleton, of F. H. Appleton & Son, Inc., and Abraham Sydean, of the Plymouth Rubber Co.

THE RUBBER TRADE IN RHODE ISLAND.

By Our Regular Correspondent.

ALL manufacturing establishments throughout Rhode Island were closed on "Liberty Day," Monday, November 11, in celebration of the surrender of Germany and the signing of the armistice. As soon as the whistles and bells sounded the prearranged code about 3 o'clock in the morning, houses were ablaze with lights, thousands of persons swarmed to the streets, parading, cheering, singing and waving flags.

At Bristol the operatives from the National India Rubber Co. and the Narragansett Rubber Co. made a solid phalanx of more than 3,500 in the parade and in Woonsocket the employees of the Alice Mill joined in the demonstration. In

Providence thousands of men, women and girls from the Revere Rubber Co., the Davol Rubber Co., Bourn Rubber Co., Glendale Elastic Fabric Co., Mechanical Fabric Co. and the Valley street plant of the United States Rubber Co. swelled the ranks of the paraders.

* * *

Following the announcement of the signing of the armistice there was a general cessation of overtime activities in the rubber manufacturing establishments of the State, and while the management of the various plants refused to discuss the situation, it was generally understood that a halt had been called on all government goods and contracts, at least temporarily. It was stated, however, that, irrespective of future employment on these contracts, the regular lines were so far behind normal conditions of the market that there was sufficient work on hand or in sight to keep the mills running to capacity for many months to come.

At the Davol Rubber Co. the manufacture of gas masks was discontinued November 13, but of the 45 men and women that were employed on this work, less than half a dozen were laid off. All of the women were given work in other departments of the plant. When the manufacture of the masks was started, very few new employes were taken on, most of those assigned to this work being withdrawn from other departments. The Revere Rubber Co. was also engaged in making gas-masks.

* * *

Colonel Samuel P. Colt, of the United States Rubber Co., is a member and president of the Rhode Island Limit Men, an association composed of firms and individuals of this State who have purchased \$1,000 worth (maturity value) of War Savings Stamps, and he is making a special effort to secure the enrollment of at least 2,000 members before the close of the year. Already there is a total membership of more than 1,400. Among the members are the Bourn Rubber Co., Mechanical Fabric Co., Davol Rubber Co., and the Revere Rubber Co., all of this city; National India Rubber Co. and Narragansett Rubber Co., of Bristol, and Woonsocket Rubber Co., of Woonsocket.

* * *

To the United War Work Fund the Woonsocket Rubber Co. contributed \$10,000, credit for \$6,000 of which was given to the Alice Mill, at Woonsocket, while the other \$4,000 goes to Massachusetts, where the other plants of the concern are located. The Glendale Elastic Fabric Co. donated \$2,000 to the fund, of which \$1,500 was credited to Massachusetts and \$500 to this State.

* * *

The developments that have followed the taking over of the site of the old Alco Co.'s plant on Valley street by the United States Rubber Co., and combining with the adjoining plant of the Revere Rubber Co., have been rapid and extensive. The combined properties now operated under the direction of the Revere Co. have a total area of 909,687 square feet, of which 444,854 square feet are included in the newly acquired Alco site. Additional machinery and facilities are being introduced. In the old Alco plant, foundations for forty new vulcanizers of large size are being laid and a number of large-size mixing machines installed. A large oil tank will be erected at the old Revere plant, as fuel oil will be used more extensively in the operations of these factories.

* * *

The Ninigret Mills Co. is the style of a new corporation chartered last month under the laws of Rhode Island with a capital stock of \$50,000. The incorporators are Frederick E. Fowler, Charles Perry and Charles S. Fowler, all of Westerly. The new concern will manufacture fabric for auto tires and will conduct business at the Arnold Mill, in Canal street, Westerly.

Among the extensive improvements and alterations that have recently been under way at the plant of the Bourn Rubber Co., Warren street, Providence, was the changing of the walls and foundations of the boiler house preparatory to enlarging the boiler equipment. Plans have just been completed for a storage building to be erected on Warren street. It is to be of brick, of mill construction, one story high, 60 by 90 feet, with concrete flooring and gravel roof.

* * *

At the National India Rubber Co.'s plant at Bristol alterations, extensions and improvements continue. During the past month extra heavy foundations have been put in at the large new storage building which was erected about a year ago.

* * *

John H. Mott, for 34 years foreman of the packing department of the National India Rubber Co., Bristol, died on November 17, in his 69th year. He was born in Bristol and made the first rubber shoes at the Byfield Rubber Co., Bristol, now the Narragansett Rubber Co., when that plant commenced operations.

* * *

John Anderson, foreman of the shipping department of the insulated wire division of the National India Rubber Co., Bristol, died on October 28, of double pneumonia. He was 32 years of age and a native of Scotland. He had been in the employ of the National company for a number of years.

THE RUBBER TRADE IN TRENTON.

By Our Regular Correspondent.

THE rubber industries of Trenton, through both employes and company officials, contributed liberally to the United War Work Fund. All the Trenton plants were placed on the 100 per cent list. The Acme, Hamilton, Home, United & Globe, Thermoid, Whitehead Brothers, Joseph Stokes, Ajax, Empire, Delion, Essex and the Joseph Stokes Rubber companies each contributed \$1,000. George R. Cook, president of the Acme Rubber Manufacturing Co., gave \$1,500; Charles E. Stokes, vice-president of the Home Rubber Co., \$500; Louis P. Destribats, manager of the Ajax Rubber Co., Inc., \$200; while General C. Edward Murray, former head of the Empire Rubber & Tire Co., gave \$800. Charles E. Stokes, of the Home Rubber Co., was chairman of the industrial section of the last war drive. Speakers visited all the rubber concerns and concerts were given at each plant to arouse interest in the drive.

* * *

All the Trenton rubber manufacturers were well represented in the peace celebration parade and the majority of them had floats in the line of march. The Essex Rubber Co. had the largest turnout and the girl employes marched in blue bloomers and blue waists. The United & Globe Cos. blew their big factory whistle from 3:30 o'clock in the morning until late in the afternoon.

* * *

The Trenton rubber concerns are now well supplied with coal for the coming winter. John S. Broughton, the Mercer County fuel administrator, recently secured permission from the Government to allow the rubber concerns not only to secure a good supply for the winter months but also to store coal for future use.

* * *

The Thermoid Rubber Co., Trenton, has nearly completed a two-story steel and brick semi-fireproof building which is intended to take care of increased business in several departments and provide increased storage space. The new structure is a continuation of the building erected several years ago and will give the company, when completed, a two-story factory approximately 280 feet in length and 70 feet wide.

The Crescent Insulated Wire & Cable Co., Inc., Trenton, was recently one of several wire companies awarded a contract by the Government for Signal Corps wire for use overseas.

Here are pictured two popular rubber men of Trenton who are so well-known in the trade that to name them would seem almost unnecessary. They were evidently enjoying a holiday at one's popular resort, judging by their happy expression, particularly that of the British officer, who is doubtless thinking of the enthusiasm his address created at a recent war-work meeting.



F. B. FULPER AND CAPTAIN BUCKLETON

Young Oakley has been in the aviation service for some time.

Milton Cohn, private secretary to John S. Broughton, president of the United & Globe Rubber Manufacturing Cos., and now connected with a base hospital supply in France, was surprised, while driving an ambulance across a battlefield, to pick up a piece of fire hose made by the Globe company. On the hose were the words, "United & Globe Fire Hose, manufactured by the United & Globe Rubber Manufacturing Companies, Trenton, N. J." The United & Globe ship their products to many foreign countries. Cohn is 23 years old and formerly lived in Brooklyn, New York. Several years ago he was given a position in the United & Globe's New York office. Because of his efficient work he was transferred to the main office at Trenton and made private secretary to President Broughton. He has been in France nearly a year.



UNITED & GLOBE FIRE HOSE FOUND ON A FRENCH BATTLEFIELD

A recent fire badly damaged the drying room at the United & Globe plant. The blaze started from an overheated pipe.

The Delion Tire & Rubber Co. contemplates the erection of additions and alterations costing \$75,000.

The Truck Tire Sales & Service Co. has been incorporated with \$50,000 capital and has opened headquarters at 42 Barnes street, Trenton. John M. Goodridge, Edith Goodridge and Thomas N. Balderston are the incorporators. Mr. Balderston has made a study of the manufacture of solid tires and has been at the Philadelphia headquarters of the United States Tire Co. for some time familiarizing himself with the details of the business. The company is now installing a new ten-ton hydraulic press, and will handle only United States solid and truck tires.

The Semple Rubber Co., Trenton, has leased for a term of years the large three-story factory building of the Japanese Silk Garment Co., situated on Lamberton street. The building will be used by the Semple company in connection with its factory on Murray street for the manufacture of automobile tubes. The company has outgrown the Murray street plant.

Charles H. Cook, treasurer of the Hamilton Rubber Manufacturing Co., sustained lacerations and contusions of the head when an automobile in which he was riding recently crashed into a pole near his home on West State street. The machine was driven by his daughter.

RUBBER-SET AND RUBBER CUSHION BRUSHES.

In the manufacture of rubber-set brushes the tufts are partly secured by the application of unvulcanized rubber before being placed in the bands or ferrules, and owing to the hardness of rubber after vulcanization, it is necessary to drill holes in that portion of the brush in the band or ferrule before the brush can be nailed. The process in making rubber cushion brushes is to rout and undercut the blocks. The bristles are sifted by an agitator through the holes of a piece of rubber somewhat larger than the recess of a block. The ends of the bristles protruding through the rubber are ironed down, and liquid rubber is placed over the ironed ends and vulcanized. The rubber containing the tufts is inserted in the back of the brush, in the end of which a hole is bored to allow the passage of air under the rubber to give the cushion effect. Hair brushes are made by this process both in the United States and in England.

Brushes have always been specifically provided for in the tariff acts at ad valorem rates of duty varying from 7½ per cent in the acts of 1789 and 1790 to 40 per cent ad valorem in most of the acts of the last half century. The rate in the Act of 1913, now in force, is 35 per cent. The provision applies alike to toilet and paint brushes. ("The Brush Industry," Tariff Information Series, No. 8. United States Tariff Commission, Washington, D. C.)

REAPPRAISEMENTS.

RAINCOATS.—The foreign market value of raincoats, imported from the Associated British Clothing Manufacturers of Leeds, England, is advanced in a reappraisal decision handed down on November 19 by Judge Howell, of the Board of General Appraisers. The raincoats in question, exported from England on July 1, 1913, and entered at this port on August 1, 1918, were valued by the importers on the invoice of 41s. each. The official decision of the general appraiser, fixing the value at 43s. each, reads as follows:

Double breasted raincoats cotton, C. 1023, entered at 41s.; re-appraised at 43s. each.

RUBBER BOOTS TO BE PLENTIFUL SOON.

Relief from the acute shortage of rubber boots for civilian use in this country is forecast by the action of the Government in asking that all manufacturers of rubber boots and shoes consider the cancellation of present contracts for rubber boots which expire December 31.

The Rubber Trade in Great Britain.

By Our Regular Correspondent.

At the time of writing, the constitution of the committee which is to advise the Ministry of Munitions as to what steps if any are advisable with regard to the government control of rubber, has not been made public, but it is understood that the Rubber Manufacturers' Association will be represented on it. Meanwhile, though there is a good deal of ferment in plantation companies, prices are keeping up well, as there is little disposition on the part of the public to dispose of shares. In the trade the general feeling is that when peace comes the price of rubber and also of shares will go up because so many countries are almost denuded of rubber goods. At the same time the huge war demand will of course fall off, and with the further increase in the output which is to be expected, prices will then fall again. The opinion is expressed that the trade will not be able to absorb all the rubber produced in a few years. A lot of rubber is now being used in place of leather, not because people prefer rubber soles to leather, but because of the scarcity and high price of leather. When leather comes down to more natural prices the rubber sole will go, to a large extent, unless the makers cut their present large profits. At the recent exhibition of footwear and leather substitutes in London, Sir Edward Fenton, chief inspector of boots for the Army Clothing Department, said that during July and August 200,000 pairs of boots had been made in this country with leather substitutes, though such substitutes were not used for army boots. That there is nothing like leather still seems to sway the official mind. The trade generally remains very busy and, unlike some others, it has no apprehension at all as to its immediate future if the peace rumors which are prevalent as I write come to an early maturity, such is the congested state of order books for civilian requirements.

Trade has continued much on what are now normal lines, though a feature has been the demand for waterproofs, owing to the incessant rain of the later part of the summer, a business in which advanced prices have proved no deterrent. In civilian business the sales to men always exceed those to women; now it is the reverse as so many women are engaged in work of one sort or another, and moreover they have more money to spend on themselves. With the present high prices of textiles the waterproof, whether rubber or merely rain-proof, is likely to remain at a high price for some time.

DETERMINATION OF THE STATE OF CURE.

In a recent paper entitled "Comparative Methods for Determining the State of Cure of Rubber," embodying work done for the Rubber Growers' Association and communicated to the "Journal of the Society of Chemical Industry" for August 31, 1918, Dr. H. P. Stevens raises an important point with regard to the testing of rubber samples. Specifications usually state that the rubber goods must stand certain physical as well as chemical tests in order to show the state of vulcanization, and Stevens shows that whereas the chemical test for combined sulphur is independent of the age of the sample, the physical tests, particularly the load supported per unit of cross-sectional area at a given elongation and *vice versa*, depend upon the age and external condition of the rubber. Comparable results are obtainable, therefore, only when the samples are tested at a fixed period subsequent to vulcanization. Further, the temperature to which the samples have been exposed also affect the results, as Stevens proved by testing at both summer and winter temperatures. In the specifications with which I am familiar there is no reference to the above causes of discrepancy and nothing definite is known as to the age of the samples being tested.

It is not uncommon for a sample to be submitted a day or two after manufacture, and if this is approved, of the manufacture of the bulk quantity is then proceeded with. It may take some months to complete the order so that a sample taken on delivery may be as many months old as the original sample was days. Moreover, summer may have given place to winter, or *vice versa*. It certainly seems, then, that Stevens' paper should be taken to heart by those responsible for physical tests made in connection with important contracts. As has been said, the chemical tests are not affected in the same way and Stevens' main objection to these seems to be the time they occupy. Many will agree with him on this point. I remember, when Weber's book was first published, hearing a Teutonic rubber chemist—if I may be allowed to say so—remark that life was too short for Weber's methods. I doubt, however, if Weber mentioned extracting rubber for a week as Stevens does in his painstaking and methodical work.

GOVERNMENT SUPPRESSION OF RUBBER IMPORTS.

On October 11 the trade received notice that a committee of the Ministry of Munitions with Sir Clarendon Hyde as chairman, had been formed to regulate the import and supply of raw rubber to manufacturers. The notice was also sent to reclaimers, as all scrap and waste rubber are included in the regulations. Under the various salvage schemes the authorities have recognized that the scrap rubber business has become quite a big thing and that the reclaimer is now considered a much more important personage than in days of yore.

JOURNALISTS ON THE TRAMP.

It will not be news to American readers to hear that a party of American journalists have been doing Great Britain. More, I believe, are to come, though whether the Editor of THE INDIA RUBBER WORLD will be among them I have no information. British journalists have also been on the tramp, and a special article contributed by one of them to a prominent paper in the North of England contains references to Pirelli's works which are of more than passing interest. After saying that Italy has not drawn much upon women for industrial war work, the writer remarks that Pirelli's great rubber works have always had many women but even to-day the proportion to men is not much higher. The women work nine hours on an average and get from 7 to 9 lire (\$1.35 to \$1.74) a day. In only one room were women seen in men's clothes, and this had always been the case. Further on the writer says: "At Pirelli's rubber factories we beheld in their stately chapel-like laboratories the production of an electric spark at a tension of 600,000 volts—a high act of modern scientific ritual that cannot be performed anywhere else in the world. It appears that they can actually go up to 800,000 volts."

GUAYULE.

The illustrated article on the guayule industry in the issue of THE INDIA RUBBER WORLD for July 1, 1918, was very interesting. No doubt many besides myself were surprised by the scientific developments which have taken place. Those who introduced guayule rubber to the English manufacturer found that their path was not all roses, as a good deal of prejudice existed. I remember the extensive exhibit at the Second London Rubber Exhibition, under theegis of H. van der Linde. This attracted a good deal of attention because of the rubber-manufacturing machinery installed. The sample of guayule which I took away with me seems to be in much the same condition

to-day as at first; it is certainly not oxidized like certain other brands of extracted rubbers on offer at that date. The guayule sample was well-rubbed with sulphur on account of its tackiness, the resin content being about twelve per cent. I do not know whether sulphur is going to be generally used, but it has obvious disadvantages. Perhaps the tackiness will be removed in the future so as to render any such addition unnecessary.

I asked a rubber manufacturer the other day as to his opinion of guayule. He said it was a long time since he had heard the name, but when it was introduced to the English trade he made numerous trials with it. The results, he said, were carefully recorded in note-books which could be referred to if occasion arose. What had been particularly against it was the variation in the quality lost in washing. He had bought it, he said, at prices varying from 36 to 84 cents per pound and there was an impression in the trade that the sellers were getting what they could in an endeavor to induce the manufacturers to arrive at its real, relative commercial value.

PERSONAL AND TRADE NOTES.

At Dublin, on September 17, Dr. Dunlop, the inventor of the pneumatic tire, was summoned for using a motor car contrary to the regulations. The doctor, who is 79 years of age, pleaded necessity and was fined the mitigated penalty of \$2.40, the magistrate characterizing him as a public benefactor.

Dr. E. M. Muspratt, owing to advancing age, has resigned the chairmanship of British Insulated and Helsby Cable Co., Limited, and is succeeded in that position by James Taylor. Dr. Muspratt will still retain a seat on the board, to which Alexander Roger, of London, has been added. Dr. Muspratt was primarily a chemical manufacturer, and a director of the United Alkali Co., of which concern his son, Max Muspratt, is now chairman, while James Taylor has been head of the Helsby Cable Works for many years.

R. T. Byrne, who presided at the annual meeting of the England & Birmingham Rubber Co., in September, announces that the company has now acquired all of the shares of the Mitcham Rubber Co., near London, and that in order to finance its various extensions it has decided to issue the balance of \$50,000 preference shares, only £18,500 having so far been issued.

E. Mather, who has been for the last two or three years president of the Amalgamated Society of India Rubber Cable and Asbestos Workers, has resigned this position on appointment as manager of Messrs. Mandelberg's new proofing works, Manchester.

With regard to my recent reference to the changes at the Revellite Co.'s works, Manchester, I may add that Mr. Reed has now given up the management which he assumed temporarily, the post now being held by Mr. Crozier, managing director.

Lord Colwyn, chairman of Charles Macintosh & Co., Limited, is one of a committee of three peers appointed to inquire into the formation and financial arrangements of the British Cellulose and Chemical Manufacturing Co. Severe strictures have been made in responsible quarters about this large new concern, which was primarily established about three years ago for the manufacture of airplane dope from cellulose acetate, a body which has been made for some years by the Dreyfus process.

HOT-WATER BOTTLES FOR MUFF HAND-WARMERS IN CHINA.

The deluge of orders from China for rubber hot-water bottles has at last been explained. All China is not suffering from indigestion nor an epidemic of Spanish influenza, but it seems that instead of carrying the old-fashioned charcoal hand-warmers in their muffs, the Chinese girls are using rubber hot-water bottles and this custom has become a style or fad. Hot-water bottles are the more popular in that thus used in a muff held close to the person they impart considerable heat to the body while warming the hands.

MISCELLANEOUS FOREIGN NOTES.

TRAVELERS' TREATY SOON GOES INTO EFFECT.

Travelers desired to protect the rights and coordinate the activities of commercial travelers in all the countries of the Western Hemisphere, has been ratified by a sufficient number of countries to go into effect. This will be a most important step forward to promote the trade of the United States in Central and South America.

The new treaty will consolidate all the many annoying provincial and local taxes, licenses, and charges placed on commercial travelers into a single, uniform Federal tax. This will enable the trade representative to go anywhere in the country to which he is sent and solicit business in person or by correspondence for the period of one year.

The samples carried by the traveler are privileged to enter at the ports of each country without being subject to duties where they have no commercial value and may be exported within a period of six months, the commercial traveler furnishing a bond for strict compliance with the law.

AMERICAN ELECTRICAL EQUIPMENT FOR SWITZERLAND.

"La Revue de Lausanne" states that the United States has offered to make a loan of 750,000,000 francs to Switzerland in order to electrify the railways. Switzerland thus would become independent of German coal.

RUBBER SHEETING USED IN DISINFECTING WOUNDED GERMANS.

Under the title "Berlin Days," Neville Taylor Gherardi writes interestingly in "The Saturday Evening Post" regarding experiences in both Germany and Austria during the time her husband was naval attaché at Berlin. Her observations in an Austrian hospital disclose one of the many uses of rubber goods in connection with the war, about which little has been written. The narrative reads:

Nowadays in Europe one talks quite naturally about the little animals that walk on the men in the trenches. I saw in the hospital in Vienna how they kept them out. All patients are received in a big iron building, where all their garments are removed and the patients scrubbed with disinfectants, the badly wounded are put on stretched rubber instead of into tubs to disinfect them, then wrapped in sheets and taken into the hospital. The clothes are then passed through a high-temperature room, which kills all life in them, after which they are repaired, cleaned and ready for the man again when he is well. There are buildings large enough to disinfect a whole train at one time after it gets back from the Russian front.

That was before the present shortage of rubber within the Central Empires became acute. Henceforth this humane treatment will in many instances have to be effected by less convenient means, and the ever-increasing shortage of rubber surgical goods can but result in a considerably increased mortality in enemy hospitals.

NIPPLES FOR FEEDING BOTTLES.

As has been stated in a previous issue of THE INDIA RUBBER WORLD, feeding bottle nipples are extremely difficult to obtain in Germany. Reworked rubber is now usually employed in making them and a firm at Munich uses a rubber substitute called Sterilin, which is claimed to be free from smell and stickiness. Apparently the rubber substitute usually produced by the industrious German chemist is not quite the perfect article it claims to be.

TIRES FROM TOADSTOOLS.

The scarcity of cork in Germany led to an investigation of possible substitutes that is reported to have resulted in the invention by Wohlfart and Sachovitz of a process by which toadstools are converted into an elastic substance, suitable for making stoppers for bottles, rings for preserve jars and in making automobile tires, etc.

Rubber Planting Notes.

RUBBER PLANTING IN BRITISH MALAYA.

L. LEWTON-BRAIN, Director of Agriculture, Federated Malay States, publishes a series of statistical tables dealing with the rubber planting industry in the Malay Peninsula. These statistics show that in spite of the crisis through which the industry is passing (in common with most other industries), there was an addition of 93,950 acres to the planted area during the last year, bringing the total up to 1,045,820 acres, of which 621,622 acres are in the Federated Malay States. These figures refer only to estates of 100 acres and over. The statistics for the various portions of British Malaya are as follows:

	1916.	1917.
Federated Malay States	551,794	621,622
Straits Settlements	145,139	153,186
Tobago	153,041	162,375
Kelantan and Kelah	98,436	105,484
Trengganu	1,045	3,150
Acres	951,870	1,045,820

The following interesting comparative table is given of estates of over 100 acres in extent:

	1916.	1917.
Number of estates	1,475	1,634
Area in possession	1,857,157	1,908,993
Planted in rubber	951,870	1,045,820
Producing	543,556	632,929
Newly planted	118,801	93,950

In addition to the above, an official approximation is made of the planted acreage of holdings of less than 100 acres each in the Federated Malay States. This is given at 271,862 acres, of which 109,535 acres are producing.

The number of laborers employed on the larger estates amounted to 352,552, of whom 228,850 were employed in the Federated Malay States. The labor force is made up as follows:

Tamil	200,431
Chinese	98,393
Malays	29,822
Indians	1,534
Others	4,542

One of the tables gives the rubber crop for 1917 as 82,319 tons, as compared with 67,677 tons in 1916 and 1,580 tons in 1908.

RUBBER IN THE FRENCH AFRICAN COLONIES.

It is estimated that the average annual production of rubber in the French Colonies of Western Africa amounts to 2,000 tons, while French Equatorial Africa produces some 3,000 tons. There are considerable stocks now available at all shipping points in France's African Colonies.

FRENCH COLONIAL RUBBER.

The Belgian Minister of Colonies has delegated Dr. G. Van Pelt a government official of the Belgian Congo, to work for a while at the Colonial Institute, Marseilles, France. Dr. Van Pelt's labors in the past have been in researches at the rubber laboratory at Delft, Holland, and as technical director of one of the largest plantations in Sumatra. The Marseilles Colonial Institute proposes to study, with the doctor's help, the measures that can be taken to improve the preparation of African rubber for the market. The "Cashiers Coloniaux," of October 18, 1918, issued by the Marseilles Colonial Institute, contains a report by Dr. Van Pelt on the subject, and a report by E. Baillaud, general secretary of the Colonial Institute, on the steps being taken to provide France with the rubber now needed. An account is given of the work being done by the bureau created in French Guiana to prevent frauds in the rubber exported from there.

Reports by the Planters' Syndicate of Indo-China and by the Professional Rubber Syndicate, which is assisting the French Ministry of Armaments in the organization of production, are also published in this issue.

BRAZILIAN RUBBER IN FRANCE.

The close harmony in which French rubber manufacturers are working to obtain the quantities of rubber they need for their factories has been well illustrated by their method of handling a recent shipment of eight hundred tons of Pará which the Bank of Brazil had shipped to France. The French Professional Rubber Syndicate, a voluntary organization, controlled the distribution of this rubber, which had been sold by the Brazilian Government to the French Government. For the present, all sales of rubber from Brazil for consumption in France are strictly governmental transactions, and it is thought that this system will continue as long as official regulation of payment and ocean freight rates remain in force.

AN END TO RUBBER FRAUDS IN FRENCH GUINEA.

Formerly, rubber brokers at Liverpool and Bordeaux were continually complaining of the impurities in rubber from French Guinea, such as leaves, bark, twigs, earth, sand and gravel. One particular lot of *Landolphia owariensis* rubber was shown on analysis, to contain:

	Per cent.
Humidity	4.80
Mineral matter	4.80
Resinous matter soluble in acetone	95.10
Vegetable impurities	7.62
Pure rubber	100.00

If this analysis had applied to the whole annual production of the colony of 1,500 tons, there would have been about 375 tons of impurities. Government control (before shipment) is now so strict that the analysis of a recently exported lot gave the following results:

	Per cent.
Mineral matter	4.00
Humidity and substances soluble in acetone	95.10
Pure rubber	100.00

Shipments now average less than five per cent impurities.

RUBBER-PLANTING INDUSTRY IN SOUTH INDIA.

At the annual meeting of the United Planters Association of Southern India, at Madras, in the latter part of August, 1918, the chairman described conditions in the rubber industry as follows:

Last year I remarked on the rapid fall in rubber price, which I thought might possibly be due to increase in home stocks, but hoped for a recovery later in the year. Rubber has been removed from the priority list, we are told, owing to currency difficulties. Freight is not available for shipment to the United Kingdom, thus cutting South Indian rubber out of the home market, and with America further restricting license for import into United States for August and September, prices are still falling, and the latest home price shows about 2s. per pound, practically the lowest on record. There is, at the present moment, large quantities of South Indian rubber awaiting shipment at West Coast ports. Rubber, unlike tea and coffee, has no local market to fall back on, and so financial aid is necessary and urgent. It is due to British enterprise and capital that Great Britain holds the commanding position she does as regards rubber supplies, an indispensable war requirement to her and her allies. Planters fully recognize that the best must be made of sea tonnage, and that the "best" can mean the carrying of only absolutely necessary war requirements and food commodities. I think those rubber companies

and estates that are in need of urgent financial aid have every right to expect and claim government aid and help in the same way as it has been given to the coffee planters by means of Taccavi loans.—(Report of the American Consul, Madras, India.)

BRITISH NORTH BORNEO RUBBER.

Despite war conditions the rubber trade is reported to have enjoyed undiminished prosperity in 1917. During that year the exports amounted to 5,470,906 pounds, valued at \$5,439,123 Straits dollars (Straits dollar, 56.7 cents, United States currency). This is an increase of 26 per cent over the total for 1916. The growth of the rubber industry in this region during the last 25 years is demonstrated by the fact that in 1892 the total exports of rubber amounted to \$59,253, and consisted entirely of wild sorts.

Available figures for the first quarter of 1918, however, show a decrease over those for the same period of 1917—1,197,310 pounds against 1,370,321 pounds.

VIEWS ON RUBBER CROP RESTRICTION.

The uncertainty of being able to ship rubber, added to the limited American imports, is forcing to the front the question of restricting crops. It appears that, before the American action became known or was even dreamed of, many large companies had reduced their output from 20 to 30 per cent. Certain authorities suggest that events in Malaya should be carefully observed, while in the meantime the question of how to conduct eventual restrictions should be considered. The utmost economy in production is recommended. If conditions become worse, it is proposed to request the government to postpone the collection of certain taxes from such companies as are hard hit.

USE OF HYDROMETERS ON RUBBER ESTATES.

J. C. Hartjens, chemical engineer of the experimental station at Malang, Java, publishes in Bulletin No. 23, "Mededeelingen van het Proefstation Malang," an extended report on the use of the latex hydrometers known as the metrolac and the latexometer for determining the caoutchouc contents of rubber latex on plantations. The author summarized the results of his investigations as follows:

The relation between specific gravity and rubber content of latex is very much influenced by the tapping system and probably by many other factors. Latexes showing the same rubber content may vary a great deal in composition of the serum and *vice versa*. Eaton's table showing the relation between specific gravity and rubber content of the latex cannot be considered reliable for general use. A limited number of latexes will show the relation indicated in the table, but no practical results can be expected from the use of hydrometers. This assumption was demonstrated experimentally by the author who remarks in conclusion that very often no reading with the instruments is obtainable on account of the thick or viscous nature of the latex, air bubbles, etc., and in many cases only dubious reading is obtained, caused by minute curdling in the latex. If good readings are possible, the corresponding rubber content very often shows great differences from the actual content.

The errors made in trial coagulation are always smaller than those made in using the instruments, even after correction. In consequence the author does not recommend the use of such instruments as metrolacs and latexometers and states that trial coagulation is still the best way to get reliable results.

RAILWAY TO DEVELOP PAPUAN INDUSTRIES.

The construction of a light railway, 18 miles in length, to connect Port Moresby, Papua, with the Laloki River, to serve a copper mining enterprise is being considered. This same line, it is claimed, will also be useful to several plantations, including rubber estates. The plan had already been decided upon before the war, but was temporarily abandoned owing to the subsequent situation in Europe.

HOPEFUL OUTLOOK FOR RUBBER PRODUCERS.

WHILE admitting that the war has been a serious trial to rubber producers, the "Financial Times" emphasizes that it has brought out certain features which promise prosperity in the near future, one of the chief of which is that proof has been afforded that synthetic rubber is not a commercial possibility.

During four years the pick of German chemists have been working to produce synthetic rubber at no matter what cost. All they have succeeded in doing is to produce small quantities of a substance which, mixed with certain proportions of natural and reclaimed rubber, makes an unsatisfactory substitute. The only real success achieved in this direction, in fact, is a great improvement in the process of reclaiming and remaking waste rubber, which might be useful in preventing rubber from going too high, but would have little effect so long as the natural product was available at anything like a reasonable price.

The war has resulted in the discovery of some new uses for rubber which are likely to prove of considerable importance in the future. Chief among these is the manufacture of rubber composite soles for boots, resorted to at first owing simply to the general shortage of leather. These soles have since fully proved their value and are, indeed, now claimed to be the best substitutes for leather soles.

There will be a big demand for rubber both in Great Britain and in the United States as soon as the war is over, and to a lesser extent also in France and Italy. To this must be added the amount which will be required to restock Belgium, Germany and Austria-Hungary, which are practically denuded of rubber, while, owing to the fancy prices which Germany has for a long time been offering, it may be presumed that there is a great lack of the commodity in all the neutral countries bordering upon the Central Empire.

Were all these demands to be met at once there would undoubtedly be not enough rubber to go around, as stocks are by no means large anywhere. In America supplies were recently calculated at about four months' normal consumption and can hardly have been increased, while in this country they are believed to be smaller still. There is probably some accumulation in the East, where companies have kept their output at the factories rather than accept the very poor prices recently offered. . . . but this could not in any case be sufficiently large to have any great effect. If the industry were left to itself, therefore, and buyers had to compete against each other, we might easily see rubber for a time forced up to the extravagant level it touched in 1910, or even beyond. This prospect appears, however, to have been already foreseen by the British Government and to be the real reason for the appointment of a controller, whose first action has been to issue a warning that a maximum price may have to be fixed. It seems a little hard that an industry which was left severely alone to cope with the difficulties occasioned by the war should be promptly put under restraint when conditions take a turn in its favor, but a wild scramble for all the available supplies, with Germany—who has the greatest—outbidding everyone else, would raise the post-war economic problem too promptly and acutely, and would not be of real benefit in the long run.

The percentage of increase in the area under cultivation reached its highest point in 1911, but it was not until four years later that the expansion in the world's production culminated. Since 1915 the trend of the latter has been downward, and in the next four years the rate of growth will be smaller year by year, the shrinkage being measurable by the drop in the percentage of new acreage planted. As regards other sources of supply, the output from Brazil has for the last six years remained fairly constant at about 38,000 tons per annum, and there is little reason to expect any increase from this source, while it is possible that there may be a further diminution unless a higher level of prices is established. The same applies to the output from Africa and other sources of wild rubber, which have also kept fairly steady during the last five years at between 12,000 and 13,000 tons per annum. The plantation industry in the Middle East is therefore likely to remain the sole source from which increased supplies can be obtained, and must tend more and more to dominate the crude rubber market as a whole.

The prospects for the industry generally appear, therefore, very hopeful for a period of at least ten years. At the end of that time it is possible that the increase of new plantations will have overtaken consumption, but in any such future crisis it will be the latexcomers who will have to bear the brunt of the consequent fall in price, while hardly any limit can be placed on the possible extension of the use of rubber.

Recent Patents Relating to Rubber.

THE UNITED STATES.

ISSUED SEPTEMBER 10, 1918.¹

NO. 1,278,762. Breast pump with rubber bulb. O. O. R. Schwidetzky, Haidbrunn, Hungary, assignor to Becton, Dickinson & Co., Rutherford—both in New Jersey.

ISSUED SEPTEMBER 17, 1918.

1,278,822. Tire rim. J. B. Atkins, assignor to The Goodyear Tire & Rubber Co.—both of Akron, Ohio.

1,278,944. Surgical instrument with parts of both hard and soft rubber. J. T. Landis, Nashville, Tennessee.

1,279,001. Inner tube for pneumatic tires. C. R. Rawdon and J. H. Heitmann—both of St. Louis, Missouri.

1,279,006. Bath spray. W. Rose, Brooklyn, New York.

1,279,068. Combined airplane and balloon. C. J. Yasensky, Weyburn, Sask., Canada.

1,279,166. Resilient heel pad. S. Schulhoff, Trenton, New Jersey.

1,279,228. Inner tube for automobile tires. G. C. Berryman, assignor of 45/100 to C. A. Jones—both of Los Angeles, California.

1,279,242. Substitute for leather and method of manufacture. G. H. Bruce, New York City.

1,279,265. Resilient cushioned wheel. H. B. Coats, Crawfordsville, Indiana.

1,279,301. Means for repairing tire casings. E. R. Dull, Chicago, Illinois.

1,279,409. Tire mounting for vehicle wheels. D. Moriarty, New Orleans, Louisiana.

1,279,444. Wind-shield cleaner. F. H. Robertson, Cleveland, O.

1,279,467. Pneumatic mattress. A. J. Smith, New York City.

ISSUED SEPTEMBER 24, 1918.

1,279,601. Fabric and rubber belt. W. W. Spadone, Brooklyn, assignor to The Gutta Percha & Rubber Manufacturing Co., New York City—both in New York.

1,279,629. Demountable tire-rim holder. W. A. Yarger, Akron, assignor of one-half to H. W. Cowgill, Canton—both in Ohio.

1,279,651. Hot-water bottle stopper. A. S. Campbell, Medford, Massachusetts. (Original application divided.)

1,279,694. Cushion tire. L. Hofmeister, Milwaukee, Wisconsin.

1,279,718. Rubber-coated cord. S. G. Lewis, Greensburg, Pennsylvania.

1,279,719. Tennis racket with rubber-coated wire-wound stringing. S. G. Lewis, Greensburg, Pennsylvania.

1,279,720. Tennis racket with stringing of rubber-coated vegetable fiber. S. G. Lewis, Greensburg, Pennsylvania.

1,279,764. Legging of elastic webbing, with non-elastic ends. P. J. Savage, New York City.

1,279,811. Fountain pen. C. L. Aragon, Reno, Nevada.

1,279,836. Tire casing. A. S. Burdick, assignor to Burdick Tire & Rubber Co.—both of Chicago, Illinois.

1,279,855. Rubber glove with thicker thumb and forefinger and ribs across inner side. J. D. Garvey, Chicago, Illinois.

1,279,924. Golf-training device. C. F. Smith, White Plains, New York.

1,279,925. Pneumatic cue. E. B. Smith, Chicago, Illinois.

1,279,926. Shaving-brush massage attachment. J. Smith, Jr., Phillipsburg, New Jersey.

1,279,936. Inflated ball. R. H. Taylor, Rochester, New York.

1,280,086. Armored tire. H. G. Robbins, Los Angeles, California.

ISSUED OCTOBER 1, 1918.

1,280,145. Demountable tire-rim. W. N. Booth, assignor to Kelsey Wheel Co., Inc.—both of Detroit, Michigan.

1,280,149. Cork-lined rubber boot. C. D. Breck, Cleveland, Ohio, assignee of W. J. Merrett, Pittsburgh, Pennsylvania.

1,280,170. Inner-grooved rubber hose and method of manufacture. N. D. Crawford, Elizabeth, New Jersey, assignor to New York Belt-ing and Packing Co., New York City.

1,280,176. Tire rim. F. L. Darling, Long Beach, California.

1,280,184. Garment supporter. I. Dow, assignor of one-half to E. L. Allen—both of Burlington, Vermont.

1,280,197. Imitation-leather shoe with rubber upper, and method of manufacture. A. G. Emery, New York City, assignor to The Goodyear's Metallic Rubber Shoe Co., Naugatuck, Connecticut.

1,280,200. Cushion wheel. I. Hayman, Los Angeles, California.

1,280,247. Button loop for garment supporters. C. P. Kuehn, assignor to A. Stein & Co.—both of Chicago, Illinois.

1,280,363. Rubber paving for roads, etc. G. Anderson, London, England.

1,280,382. Non-skid tire tread. O. Braunwarth, New York City.

1,280,421. Lined waterproof mitten. H. J. Diem, assignor of one-half to Sanford Narrow Fabric Co.—both of New York City.

ISSUED OCTOBER 8, 1918.

1,280,692. Paper-cup holder with elastic rim-engaging device. C. Errett, New York City, assignor to Public Service Cup Co., Brooklyn—both in New York.

1,280,808. Pneumatic tire. D. F. Morgan, assignor to Hofmann-Morgan Rubber Co.—both of Chicago, Illinois.

1,280,836. Adjustable shoe-heel with rubber cushion. S. Quevedo, Havana, Cuba.

1,280,957. Rubber composition substitute for shoe-soles and method of manufacture. G. H. Bruce, Brooklyn, New York.

1,281,110. Garment supporter. B. H. White, Chicago, Illinois.

1,281,131. Fountain pen with separate attachable filling reservoir, etc. J. L. Clarke, Leavenworth, Kan., England; D. E. and R. A. Clarke and C. S. Raymond-Barker, executors of said J. L. Clarke, deceased.

1,281,194. Self-filling fountain pen. F. H. Mooney, Chicago, Illinois, assignor to The Calkin Pen Manufacturing Co., Toledo, Ohio.

1,281,211. Respirator. F. D. Rogers, Oakdale, Louisiana.

1,281,529. Rubber and fabric composition shoe sole. J. Solomon, Orono, Ohio.

THE DOMINION OF CANADA.

PUBLISHED JULY 31, 1918.

185,288. Demountable tire-rim. C. R. Tizzard, Humber Bay, Ontario.

185,328. Resilient tire. The Runyan Cushion Wheel Co., assignee of A. L. Runyan—both of Omaha, Nebraska, U. S. A.

185,339. Resilient wheel. The Runyan Cushion Wheel Co., assignee of A. L. Runyan—both of Omaha, Nebraska, U. S. A.

185,373. Resilient tire. R. Blake, London, England.

185,608. Electrical cable. H. W. Fisher, Huguenot Park, Staten Island, New York, U. S. A.

185,609. Tire valve. H. F. Miller, Rushville, Nebraska, U. S. A.

185,735. Artificial car drum. E. Baum, Philadelphia, Pennsylvania, U. S. A.

185,744. Resilient tire. L. E. Clawson, San Francisco, California, U. S. A.

185,837. Cushion tire. J. I. Trotter, New York City, U. S. A.

THE UNITED KINGDOM.

PUBLISHED OCTOBER 9, 1918.

118,034. Rubber-covered rollers. I. Reddaway & Co., and J. Muskett, Cheltenham street, Pendleton, Manchester.

118,118. Self-filling fountain pen. F. Riesenberger, Schoolship "Newport," care of Postmaster, New York City, U. S. A. (Not yet accepted.)

118,130. Point protectors for fountain pens. R. Fallovs, Dungen, London.

118,145. Rubber-studded metal tire for tractors, etc. Dunlop Rubber Co., 14 Kent street, London, and C. Macbeth, Para Mills, Aston, Birmingham.

118,176. Collapsible gas-containers for motor vehicles. United Automobile Services Limited, Great Eastern Garage, Lowestoft, and J. C. Jolly, Cockton Hill, Bishop Auckland, Durham.

PUBLISHED OCTOBER 16, 1918.

118,327. Inflatable and collapsible gas-containers for motor vehicles. G. P. O'Brien, 33 O'Connell's Road, Kilburn, London.

PUBLISHED OCTOBER 23, 1918.

118,447. Fountain pen. G. Dalton, 21 Norman Road, Canterbury, Kent.

118,472. Improvements in kite balloons. Aeronautical Instrument Co., and G. Brewer, 33 Chancery Lane, London.

118,474. Improvements in kite balloons. Aeronautical Instrument Co., and G. Brewer, 33 Chancery Lane, London.

118,500. Rubber tension cords for deadening landings-shock of airplanes. A. F. Hawkesley, Fairhaven, Lytham, Lancashire.

118,507. Spring bulb formed integrally with nozzle. G. W. Jessup, 44 Bromfield street, Boston, Massachusetts, U. S. A.

118,523. Self-filling fountain pen. H. W. Horne, 27 Rose street, Edinburgh.

118,554. Rubber ring for artificial legs. E. Paoletti, 25 Corso dei Tintori, Florence, Italy.

118,571. Rubber buffers for joints for artificial limbs. E. Smith, 124 St. Stephen's Green, West, Dublin.

PUBLISHED OCTOBER 30, 1918.

118,641. Tire valve. H. F. Kraft, 219 Godwin avenue, Ridgewood, New Jersey, U. S. A. (Not yet accepted.)

118,745. Stocking suspenders. A. J. D'Ostrop, Key West, Monroe, Florida, U. S. A.

THE FRENCH REPUBLIC.

PATENTS ISSUED (WITH DATES OF APPLICATION).

487,592. (April 2, 1917.) Improvements in pneumatic shock absorbers for airplanes. E. Koper.

487,599. (November 15, 1917.) Improvements in temporary or permanent supports for solid tires of vehicles. B. Lee and S. H. Lee.

487,696. (November 20, 1917.) Armored-pneumatic tire. J. E. Dyaart.

487,709. (November 21, 1917.) Pneumatic tire for vehicle wheels. W. D. McCall.

487,794. (November 28, 1917.) Improvements in elastic fabrics. P. L. Josseran.

¹ For other patents under this date, see THE INDIA RUBBER WORLD, November 1, 1918.

- 487,043. September 25, 1942. Method of making heels and soles for shoes. Ch. Planchamp.
 487,044. November 1, 1942. Bags for crutches and canes. C. Lynde and P. J. J. J.

TRADE MARKS. THE UNITED STATES.

- N** 71,723. The word *MILK* in a circle above a conventional foot-shaped silhouette—brake linings and friction facings. The Asbestos and Rubber Works of America, New York City.
 83,024. The word *STELLA* beneath a circle within which is a star having the characters *P* and *SC* on either side of the top point and the letter *M* between the two bottom ones—rubber goods or goods incorporating rubber, namely, aprons for paper mills in Canada—manufactured by Fredrick S. C. M. Inc., Italy.
 106,440. Conventional silhouette bearing the monogram *W. T. Co.*—hot water bottles and bags, douche bags, syringes, invalid cushions, and ice bags. Whittall Tatum Co., New York City.
 107,893. The word *DIRECTORY*—stylographic and fountain pens, etc. Hinks, Wells & Co., Birmingham, England.
 108,505. The word *LIBERTY* beside a representative of the figure of a liberty holding aloft a tire—rubber tires. Liberty Tire & Rubber Co., Green Bay, Wisconsin.
 110,577. Silhouette of Ajax rolling a tire—pneumatic tire accessories: plastic and moving parts, broken lines, repairs, patching flaps, rubber and fabric valve-bases, cementless tube patches, and oval inner-tube patches. Ajax Rubber Co., Inc., Milbrook, New York.
 111,844. The word *APACHE*—self-vulcanizing tires. M. J. Cagle, San Francisco, California.
 112,103. Silhouette of a star—billiard and pocket-billiard balls. The Brunswick-Balke-Collender Co., Chicago, Illinois.
 112,582. The word *LIBERTY*—representative of the figure of a liberty holding aloft a tire—rubber tires. Liberty Tire & Rubber Co., Limited, Leyland, England.

THE DOMINION OF CANADA.

- 28,650. The word *WOLFE*—surgical bandages and bandaging material. Reid Brothers, Seattle, Washington, and San Francisco, California, U. S. A.
 23,677. The word *KOCHUK*—general. Rubberset Co., Limited, Toronto, Ontario.
 23,681. Representation of a shield bearing the word *EFFICIENCY* and the monogram *R. B.*—hot-water bottles, ice bags, inflatable invalid cushions, rubber syringes, etc. Reid Brothers, Seattle, Washington, and San Francisco, California, U. S. A.
 28,707. The letters *T. J. S.*—rubber shoe heels and rubber goods of all kinds. W. Jeffries, Beamsville, and H. C. Jeffries, Toronto—both in Ontario.

DESIGNS.

THE UNITED STATES.

- N** 52,430. Tire. Term 14 years. Patented September 17, 1918. L. P. Desbriats, Trenton, New Jersey, assignor to Ajax Rubber Co., Inc., Milbrook, New York.
 52,431. Tire. Term 14 years. Patented September 17, 1918. L. P. Desbriats, Trenton, New Jersey, assignor to Ajax Rubber Co., Inc., Milbrook, New York.



52,430



52,431



52,459

- 52,459. Tire. Term 14 years. Patented September 17, 1918. H. A. Phillips and J. G. Stamm—both of Cleveland, Ohio.
 52,500. Golf ball. Term 14 years. Patented September 24, 1918. F. A. Vaile, New York City, assignor to Revere Rubber Co., Providence, Rhode Island.

ASBESTOS IN THE PHILIPPINES.

A number of years ago reports were received in Manila to the effect that there were deposits of asbestos in the province of Ilocos Norte, and in 1906 Dr. W. D. Smith, geologist of the Bureau of Science, made a technical reconnaissance and reported that evidence was plentiful of the existence of considerable quantities of asbestos at a place called Dugong-Dugong.

A corporation, to be known as the Dugong-Dugong Co., is now being formed, which will continue to give special attention to opening up the asbestos deposits and making this material available for market. Its property is located near Laoag, Ilocos Norte, about two and one-half miles inland from the sea on a stream that is navigable for small craft.—("Manila Merchants' Association Review.")

WHAT TEAM WORK AND EMULATION ACCOMPLISH.

At the Elmira, Ontario, plant of the Dominion Rubber System, the spirit of team work has been invoked to speed up production. As the success of such a campaign depends

upon definite individual knowledge of the collective results, a great clock was erected showing the daily production of this factory in pairs of footwear. Watching the advancing hand has stimulated such enthusiasm that in a little more than three months production has been increased beyond 2,000 pairs a day, a very commendable record.

The Miller Rubber Co., Akron, Ohio, has found a very comprehensive way to foster enthusiasm and speed up production, with results that are most satisfactory to all concerned.

The plan is both individually and collectively stimulative and

PRODUCTION CLOCK.

hinges upon emulation, which has been said to be the mainspring of efficiency. A bonus for the best individual records and com-

petition between departments have resulted in remarkably high quality and huge quantity of product. A series of percentages has been arranged and the workmen are penalized a certain number of points for tardiness, absence, blemished articles and less than the average standard of quantity. At the end of each month prizes are awarded for the following records:

100 per cent....	\$10.00
95 per cent....	7.50
90 per cent....	5.00



TEAM WORK.

In addition to these individual rewards, the total average department records are posted regularly each month on special bulletin boards to stimulate departmental pride. These bulletins are jealously watched and a keen, friendly rivalry exists. So productive was this plan in the expenditure of more concentrated energy that even the change of schedule from a nine to an eight-hour day was made at piece-work rates with great increase of earnings to the operatives and correspondingly augmented production. Thus it is proved again that work that means certain, direct, personal benefit is entered into with all the zest of a thrilling game.

GOODYEAR INCREASES COTTON ACREAGE.

Pleased with the results of its 1918 campaign, the largest grower of Egyptian cotton in America, the Goodyear company, is already buying more land to put into this high priced staple. This concern has 12,000 acres of the silky cotton in the Salt River Valley in Arizona, and next year will plant 2,000 acres additional. The crop this year is above normal, it is declared, and a small army of Mexicans is at work picking it.

Review of the Crude Rubber Market.

Copyright, 1918.

NEW YORK.

THE somnolence of the market has ceased, the drowsy feeling which afflicted buyers and sellers until November 11, has vanished. In the first place, the Government permits the importation of 7,500 tons over and above the 25,000 tons allowed for the present period, besides which many expect a further increase in the quantities that may be imported after January 1, some even hope for an early abolition of all import restrictions. At the same time it may be well remembered that next year, lack of shipping may have more to do with the total volume of imports than any probable Government restrictions. Sellers are now asking almost as high prices as the maximum fixed by the Government, and buyers who would not buy at lower figures a few weeks ago are showing considerable interest in spite of the higher quotations.

"The Dutch East Indies Government has stopped the export of rubber, on October 8, 1918," says the "Straits Budget," from which we also learn that a new department of the Dutch Foreign Office has been established to unify economic and foreign policy and especially to renew economic relations with the belligerents.

PLANTATIONS.—Allocated rubber was quoted on November 12 at 51 cents for Latex and 49 cents for Ribs; April-June shipments were quoted at 53 cents for Latex and 52 cents for Ribs. Free rubber prices were, on November 26, 60 cents for Latex and 59 cents for Ribs.

PARAS.—Quotations, with the upward tendency continuing strongly, are: Upriver fine, 66 to 68 cents (a month ago 56 to 58 cents); Upriver coarse, 38 to 40 cents (a month ago 30 to 32 cents); Upper cauchó ball, 38 to 40 cents (a month ago 30 to 32 cents); Cameté, 26 to 28 cents (a month ago 21 to 22 cents).

CENTRALS.—Fractional changes only, untouched by the upward swing.

NEW YORK SPOT QUOTATIONS.

Following are the New York spot quotations, one year ago, and allocation and free rubber prices on November 25. Government option prices, c. i. f. New York, are given in the last column.

PLANTATION HEVEA—	Spot, Dec. 1, 1917.	Allocated, Nov. 25, 1918.	Free, Nov. 25, 1918.	Gov't, Nov. 25, 1918.
First latex crépe.....	56 1/2 @	54 @	61 1/2 @	63
*Hevea first crépe.....	49 @	52 @	57 @	60
Amber crépe No. 1.....	48 @	47 @	56 @	60
Amber crépe No. 2.....	47 @	46 @	55 @	58
Amber crépe No. 3.....	46 @	45 @	54 @	57
Brown crépe, thick clean.....	45 @	44 @	53 @	60
Brown crépe, thin clean.....	44 @	43 @	52 @	60
Brown crépe, thin specky.....	43 @	42 @	51 @	59
Brown crépe, rolled.....	42 @	41 @	50 @	58
Smoked sheet, ribbed standard quality.....	55 @	52 @	60 1/2 @	62
*Hevea ribbed smoked sheets.....	52 @	50 @	58 @	61
Smoked sheet, plain standard quality.....	51 @	49 @	57 @	60
*Hevea plain or smooth smoked sheets.....	50 @	48 @	56 @	59
Unsmoked sheet, standard quality.....	49 @	47 @	55 @	58
*Hevea unsmoked sheets.....	48 @	46 @	54 @	57
Colombo scrap No. 1.....	47 @	45 @	53 @	56
Colombo scrap No. 2.....	46 @	44 @	52 @	55

BRAZILIAN PARAS—

Upriver fine.....	55 @	58 @	64 @	66 1/2 @
Upriver medium.....	50 @	52 @	57 @	63
Upriver coarse.....	45 @	47 @	52 @	58
Upriver weak fine.....	44 @	43 @	51 @	57
Islands fine.....	43 @	42 @	50 @	56
Islands medium.....	42 @	41 @	49 @	55
Islands coarse.....	41 @	40 @	48 @	54
Cameté.....	39 @	38 @	46 @	52
Lower cauchó ball.....	34 @	33 @	41 @	48
Peruvian fine.....	33 @	32 @	40 @	47
Tapioca fine.....	31 @	30 @	38 @	45

	Spot, Dec. 1, 1917.	Allocated, Nov. 25, 1918.	Free, Nov. 25, 1918.	Gov't, Nov. 25, 1918.
AFRICANS—				
Niger lake, prime.....	35 @	30 @	28 @	28
Benguela, extra No. 1, 28%.....	33 @	30 @	33 @	33
Benguela, No. 2.....	30 @	26 @	29 @	29
Congo prime, black upper.....	54 @	45 @	48 @	48
Congo prime, red upper.....	42 @	45 @	48 @	48
Rio Nunez ball.....	60 @	60 @	58 @	55
Rio Nunez sheets and strings.....	60 @	60 @	58 @	55
Conakry nigers.....	60 @	60 @	58 @	55
Massai sheets and strings.....	60 @	60 @	58 @	55
CENTRALS—				
Corinto scrap.....	35 @	36 @	39 @	39
Esmeralda sausage.....	35 @	36 @	39 @	39
Central scrap.....	34 @	35 @	39 @	39
Central scrap and strip, 75 per cent.....	32 @	34 @	34 @	35
Central wet sheet, 25 per cent.....	25 @	26 @	26 @	26
Guayule, 20% guarantee.....	25 @	26 @	26 @	26
Guayule, dry.....	25 @	25 @	25 @	25
MANICOBAS—				
Ceara negro heads.....	37 @	37 @	37 @	37
Ceara scrap.....	37 @	37 @	37 @	37
Manicoba, (basis 30% loss washing and drying).....	36 1/2 @	36 1/2 @	36 1/2 @	36 1/2
Mangabeira thin sheet.....	35 @	35 @	35 @	35
EAST INDIAN—				
Assam crépe.....	54 @	54 @	54 @	54
Assam on-line.....	54 @	54 @	54 @	54
Penang block scrap.....	37 @	37 @	37 @	37
BALATA—				
Block, Ciudad Bolivar.....	70 @	70 @	71 @	71
Colombia.....	58 1/2 @	58 1/2 @	60 @	61
Panama.....	58 @	58 @	58 @	59
Surinam sheet.....	95 @	95 @	95 @	95
Surinam amber.....	97 @	97 @	97 @	97
PONTIANAK—				
Banjermassin.....	12 @	13 @	13 @	15
Palembang.....	16 @	16 @	16 @	16
Pressed block.....	19 1/2 @	19 1/2 @	19 1/2 @	19 1/2
Sarawak.....	14 @	14 @	14 @	14
GUTTA PERCHA—				
Gutta Siak.....	19 @	19 @	19 @	28
Kel. Malacca.....	19 @	19 @	19 @	30

*Rubber Association of America nomenclature.

RECLAIMED RUBBER.

Dullness has characterized the November market for reclaimed rubber, a condition that has ruled since the armistice, in all markets for rubber supplies. Buyers have apparently decided to await the Government's final policy with regard to raw materials and manufactured products. The release of an additional 7,500 tons of rubber imports and the removal and modification of restrictions in the manufacture of certain rubber products is an indication that the Government will soon relieve the industry of all restriction. Prices have not changed materially.

NEW YORK QUOTATIONS.

NOVEMBER 25, 1918.

Subject to change without notice.

Standard reclaims:			
Floating.....	18 @	18 @	40
Friction.....	12 @	12 @	41
Mechanical.....	12 @	12 @	41
Reel.....	12 @	12 @	41
Shoe.....	12 @	12 @	41
Tire, auto.....	12 @	12 @	41
Truck.....	12 @	12 @	41
White.....	12 @	12 @	41

THE MARKET FOR COMMERCIAL PAPER.

In regard to the financial situation, Albert B. Beers, broker in crude rubber and commercial paper, No. 3 William street, New York, advises as follows:

During November the demand for commercial paper has been light, due largely to the recent drive for the Fourth Liberty Loan and the United War Work Campaign, and the demand for paper has been principally from industrial banks, the best rubber manufacturers using an 8 to 60 percent, and those not so well known, 6 1/2 to 7 percent. From now on there is prospect of improving demand and somewhat lower rates, as the money market should be easier.

		POUNDS.		POUNDS.		PORT OF DISTRICT OF MICHIGAN.	
NOVEMBER 7. By the <i>Ning Chow</i> , from Penang:						IMPORTS:	
Fred. Stern & Co., Ltd.						Pounds.	
Alden's Successors, Limited...		5,240				India rubber	
Robinson & Co., Ltd.		5,400				Manufactures of india rubber	
The Goodyear Tire & Rubber Co., Inc.		56,700		67,340		Total	
NOVEMBER 7. By the <i>Ning Chow</i> , from Singapore, via Yokohama:							
J. T. Johnstone & Co., Ltd.		112,500				Rubber scrap	
Fred. Stern & Co., Ltd.		160,200				India rubber boots—pairs...	
The B. F. Goodrich Co., Ltd.		512,740				India rubber shoes—pairs...	
Rubber Importers and Dealers Co., Inc.		35,100				Other rubber tires	
Alden's Successors, Limited...		140,940		1,261,080		Belting, hose, etc.	
Kobe, via Yokohama:						Druggists' rubber sundries...	
L. Littlejohn & Co., Ltd.		50,400				All other manufactures of india rubber	
The Goodyear Tire & Rubber Co., Inc.		5,400		56,340		Total	
*Arrived at Seattle.							
GUTTA.							
NOVEMBER 7. By the <i>Arabia Maru</i> , from Singapore, via Yokohama:							
United Malaysian Rubber Co. (Gutta slak.)		75,600					
TO SEATTLE, WASH.							
Wan, via Yokohama:							
The Goodyear Tire & Rubber Co., Inc.							
Alden's Successors, Limited...		225,000					
Fred. Stern & Co., Ltd.		1,980		231,660			
Mitsui & Co., Limited...		207,540					
W. R. Grace & Co., Ltd.		5,220					
Alden's Successors, Limited...		8,820					
J. T. Johnstone & Co., Ltd.		51,300		404,640			
Alden's Successors, Limited...		42,480					
Curry, McPhillips & Co., Ltd.		53,280					
L. Littlejohn & Co., Ltd.		170,100					
Fred. Stern & Co., Ltd.		23,080					
J. T. Johnstone & Co., Ltd.		256,860					
The Goodyear Tire & Rubber Co., Inc.		38,880					
United Malaysian Rubber Co., Ltd.		50,580		635,260			
Kobe, via Yokohama:							
The B. F. Goodrich Co., Ltd.		112,680					
Kobe, via Yokohama:							
The Goodyear Tire & Rubber Co., Inc.		86,400					
NOVEMBER 7. By the <i>Ning Chow</i> , from Penang, via Yokohama:							
J. T. Johnstone & Co., Ltd.		61,200					
Sweetenham, via Yokohama:							

EXPORTS OF AMERICAN RUBBER GOODS, FISCAL YEAR ENDED JUNE 30, 1918. (BY COUNTRIES.)

EXPORTED TO—		Automobile.		All Other.		of Rubber.		Total.	
		Value.		Value.		Value.		Value.	
Azores and Madeira Islands.									
Brazil.									
Cuba.									
Colombia.									
Iceland and Faroe Islands...									
Norway.									
Russia in Europe.									
Sweden.									
Switzerland.									
United Kingdom—									
Total, Europe.		\$526,439		1,391		298,064		\$158,865	

NORTH AMERICA:		Automobile.		All Other.		of Rubber.		Total.	
		Value.		Value.		Value.		Value.	
British Honduras.									
Canada.									
Central American States—									
Costa Rica.									
Guatemala.									
Honduras.									
Nicaragua.									
Panama.									
Salvador.									
Mexico.									
Miquelon, Langley, etc.									
Newfoundland and Labrador.									

EXPORTED TO— North America	Bolivia Pounds Value	Boots.		Sloes.		Druggists' Rubber Sundries		Tires.		All Other Manufactures of Rubber		Total Value.
		Pairs.	Value.	Pairs.	Value.	Pairs.	Value.	Automobile.	All Other.	Value.	Value.	
West Indies												
British:												
Jamaica	1,068	9	42	2,055	1,177	1,558	19,391	1,998	2,553	29,393		
Trinidad and Tobago	7,400	12	50	7,400	1,177	2,104	109,097	12,116	11,080	143,183		
Other British	16,048					2,762	1,800	1,073	1,399	14,344		
Total British	24,516					3,425	3,236	1,074	6,684	43,853		
Dutch	39,454	438	1,069	60,555	3,940	90,749	1,336.33	116,859	374,330	2,372.11		
Danish	1,817					245	9,839	466	1,722	12,399		
Dominican Republic	175.60					8,842	61,684	7,795	17,925	114,795		
French	1,315	5		463	794	510	9,034	417	2,124	13,789		
German	3,063			1,158	810		36,474	1,807	2,706	45,518		
Haiti	6,593	1				752	13,991	1,572	3,261	21,913		
Totals, North America.....	\$1,529,170	147,710	\$415,174	418,946	\$381,355	\$408,220	\$4,474,713	\$306,435	\$2,191,953	\$9,707,020		
SOUTH AMERICA												
Argentina	\$154,866	18	\$50	12,137	\$9,626	\$36,509	\$1,649,840	\$239,321	\$172,952	\$2,063,173		
Bolivia	276,328	896	1,043	4,582	3,938	37,967	455,102	15,995	156,279	967,884		
Chile	21,789	602	1,413	3,908	3,938	3,865	725,876	54,845	124,466	1,261,066		
Colombia	21,000	15					54,648	6,532	21,060	116,402		
Ecuador	7,149			1,339	1,113	4,005	46,305	338	7,956	8,675		
Falkland Islands	2,400									2,400		
Guatemala	2,571	1	5	5,334	1,058	29,437	939	4,963	42,664			
British	313	3		216		117	1,918	542	93	3,377		
Dutch	604									604		
French	4,444					294				51	5,248	
Paraguay	50,701	1,333	1,744	9,234	6,856	6,730	167,309	2,760	3,441	245,619		
Peru	29,651	172	6,764	9,234	6,856	6,527	224,694	6,070	33,177	307,599		
Uruguay	6,468	24	66	633		6,383	116,612	1,072	28,020	162,054		
Venezuela												
Totals, South America.....	\$669,660	2,767	\$13,712	72,785	\$53,677	\$136,611	\$3,432,181	\$330,506	\$586,097	\$5,522,453		
ASIA												
Aden							81,536			\$2,536		
China	\$36,973	6	\$32	1,283	118.7	8,000	33,039	\$2,760	\$40,147	163,510		
British				120	62		63			62		
Japanese				72	60		245	927	774	636	6,506	
Chinese	3,862											
East Indies												
British:												
British India	61,846	126	437	4,402	3,167	17,714	416,411	20,389	52,057	572,021		
Strait Settlements	3,347					1,082	214,887	310	6,790	226,615		
Other British	7					12	5,466	551	2,952	56,331		
Dutch	7,354					5,914	347,912	16,278	37,653	480,981		
French	5,682	582	1,467	1,467	854	7,411	4,076	4,076	1,110	23,127		
Hongkong	334,614	6,614	12,887	37,978	32,133	3,890	83,235	7,766	106,031	580,458		
Japan										125	1,763	1,894
Russia in Asia				2	6					157	534	17,292
Siam	37					388	16,179	129	1,763	17,292		
Totals, Asia.....	\$54,879	7,298	\$15,141	50,128	\$41,024	\$39,161	\$1,194,551	\$50,186	\$254,724	\$2,137,666		
OCEANIA												
British Oceania—												
Australia	\$260,924	819	\$2,489	75,461	\$46,747	\$48,794	\$819,755	\$71,501	\$197,118	\$1,447,328		
New Zealand	50,864	7,692	22,378	20,371	1,474	15,182	46,964	24,331	105,805	1,178,739		
Other British	38			2,362	1,293	21	16,124	167	866	19,009		
French Oceania	716			2,897	3,306	361	10,801	2,284	2,085	19,553		
German Oceania	133	7	16	1,371	1,942		111	134	1,110	8,086		
Philippine Islands	151,092	575	1,783	255,496	177,261	12,858	863,727	155,055	170,982	1,531,758		
Totals, Oceania.....	\$462,757	8,093	\$26,666	357,958	\$244,073	\$77,216	\$2,662,422	\$253,372	\$477,966	\$4,204,472		
AFRICA												
British Africa:												
West	\$2,311			41	\$48	\$2	\$33,470	\$3,714	\$1,083	\$40,628		
1916-17	502,497	1,677	\$5,753	46,248	\$4,639	9,413	693,065	29,131	81,414	1,355,364		
East	10	2	5				21,846	88	379	22,368		
French Africa							2,399		208	2,607		
German												
Madagascar	303									247	555	
Mosambique										125	125	
Portuguese Africa	42,001	1	2				506		1,128	45,637		
South	360									360		
Totals, Africa.....	\$547,482	1,692	\$5,805	46,289	\$34,134	\$9,415	\$753,286	\$32,933	\$84,663	\$1,467,718		
Grand Totals:												
Grand totals, 1917-18.....	\$4,578,396	1,559,398	\$4,861,213	1,244,170	\$913,128	\$884,245	\$13,977,671	\$1,130,623	\$6,194,816	\$32,540,092		
Grand totals, 1916-17.....	3,532,383	600,455	1,483,379	3,356,484	1,710,325	1,130,001	12,380,001	2,547,652	8,265,599	29,873,349		
Grand totals, 1915-16.....	2,986,953	720,130	1,619,260	1,926,896	1,046,102		17,936,327	3,003,077	7,290,345	33,881,964		
Grand totals, 1914-15.....	1,807,848	318,727	726,765	2,219,000	2,053,586		4,961,270	756,602	3,528,486	13,653,531		
Grand totals, 1913-14.....	2,372,887	401,361	779,206	1,634,755	834,969		3,505,367	563,372	3,453,472	11,008,493		
Grand totals, 1912-13.....	2,605,551	109,328	274,330	2,311,467	1,162,685		3,943,220	611,458	3,913,036	12,511,548		
Boots and Shoes:												
Grand totals, 1911-12.....	\$2,315,484		2,545,076	\$1,502,890			\$2,657,809	\$546,833	\$4,144,273	\$11,167,289		
Grand totals, 1910-11.....	2,163,416		3,984,332	2,279,436			2,085,107	592,470	3,866,825	10,947,248		
Grand totals, 1909-10.....	1,960,885		2,936,435	1,264,270					3,821,596	6,615,074		
Grand totals, 1908-09.....	1,492,445		2,080,253	1,014,260					3,743,040	6,705,105		
Grand totals, 1907-08.....	1,347,775		2,310,420	1,331,886					3,729,643	6,214,910		
Grand totals, 1906-07.....	1,253,369		2,693,690	1,505,682					2,966,144	5,492,385		
Grand totals, 1905-06.....	1,221,159		2,390,539	1,314,344					2,572,375	4,780,817		
Grand totals, 1904-05.....	984,100		2,310,420	1,331,886					3,729,643	6,214,910		
Grand totals, 1903-04.....	830,416		2,307,401	1,354,494					1,781,941	3,642,402		
Grand totals, 1902-03.....	614,146		2,594,708	1,046,315					1,727,527	3,017,268		
Grand totals, 1901-02.....	565,726		1,459,100	724,015								

*States separately after 1912. *Tires were not specifically reported before 1910-11. *Druggists' rubber sundries were not specifically reported before 1917-18.

OFFICIAL INDIA RUBBER STATISTICS FOR THE UNITED STATES.

IMPORTS OF CRUDE AND MANUFACTURED RUBBER.

	1917.		1918.	
	Pounds.	Value.	Pounds.	Value.
UNMANUFACTURED—free.				
India rubber				
From—				
France.....	1,181	\$39,242		
United Kingdom.....	5,007,948	3,676,166	54,948	\$21,311
Canada.....	264,438	457,242	731,466	358,456
Central America.....	68,235	28,734		
Mexico.....	52,691	24,310	106,380	32,085
Brazil.....	2,728,898	592,279	1,005,367	564,559
Pera.....	1,174,208	592,256		
Other South America.....	171,850	72,390	67,142	29,451
British East Indies.....	24,351,736	14,696,228	14,444,522	6,492,061
Dutch East Indies.....	5,681,450	3,523,233	3,449,469	1,383,705
Other countries.....	42,131	25,178	707,288	399,494
Totals.....	41,175,136	\$24,057,598	21,466,582	\$9,279,123
Manufactured—dutiable.				
Latex.....	354,498	187,847	73,684	44,395
Guayule.....	600,051	210,845	58,686	23,474
Jelutong (Pontianak).....	1,476,740	114,872	1,947,716	125,847
Gutta percha.....	11,053	15,361	2,217	4,500
Totals.....	41,075,434	\$24,585,563	23,548,885	\$9,497,719
Rubber scrap.....	1,827,074	1,311,413	621,564	43,167
Totals, unmanufactured.....	45,886,158	\$24,717,774	24,170,449	\$10,520,506
MANUFACTURED—dutiable.				
India rubber and gutta percha.....		\$20,833		\$53,409
India rubber substitutes.....		77	1,248,731	171,657

EXPORTS OF DOMESTIC MERCHANDISE.

	1917.		1918.	
	Pounds.	Value.	Pounds.	Value.
MANUFACTURED—				
Automobile tires.....				
To—				
France.....	374		1,351	
Russia in Europe.....			211	
United Kingdom.....	5,007		5,100	
Canada.....	1,909,221		1,107,57	
Mexico.....	48,954		115,305	
Cuba.....	148,580		116,379	
Argentina.....	148,793		278,432	
Brazil.....	23,381		6,094	
Chile.....	52,681		52,681	
British India.....	8,091		36,784	
Dutch East Indies.....	47,111		47,111	
Australia.....	15,361		15,361	
New Zealand.....	98,107		15,469	
Philippine Islands.....	50,147		133,473	
British South Africa.....	95,752		2,003	
Other countries.....	144,580		387,891	
Totals.....		\$971,751		\$1,566,589
All other tires.....		89,365		64,667
Scrap and old.....	114,866		81,629	4,265
Reclaimed.....	232,090	40,012	172,516	31,549
Belted, hose and packing.....	369,669		444,110	
Rubber boots.....	87,741	262,984	33,418	113,583
Rubber shoes.....	140,582	93,877	231,161	641,529
Druggists' rubber sundries.....	64,926		63,750	
Other rubber manufactures.....	430,668		640,528	
Totals, manufactured.....		\$3,304,740		\$3,575,667
Fountain pens..... number	29,941	\$19,641	13,109	\$9,328

EXPORTS OF FOREIGN MERCHANDISE.

	1917.		1918.	
	Pounds.	Value.	Pounds.	Value.
UNMANUFACTURED—				
India rubber.....	243,579	\$144,966	229,484	\$118,502
Rubber scrap.....	16,440			
Totals unmanufactured.....	260,019	\$144,966	229,484	\$118,502
MANUFACTURED—				
India rubber.....		\$48		\$7,042
Substitutes, elastine, etc.....		3		
Totals, manufactured.....		\$51		\$7,042

EXPORTS OF RUBBER GOODS TO NON-CONTIGUOUS TERRITORIES OF THE UNITED STATES.

	1917.		1918.	
	Pounds.	Value.	Pounds.	Value.
MANUFACTURED—				
To—				
Alaska:				
Belted, hose and packing.....	819,340		\$4,130	
Boots and shoes.....	11,111	34,036	10,133	24,517
Other rubber goods.....		6,844		4,776
Totals.....		\$60,288		\$37,423
To—				
Hawaii:				
Belted, hose and packing.....	\$7,779		\$9,617	
Automobile tires.....	64,418		62,334	
Other tires.....	7,155		534	
Other rubber goods.....	21,700		7,223	
Totals.....		\$101,052		\$79,728

	1917.		1918.	
	Pounds.	Value.	Pounds.	Value.
TO—				
Philippine Islands:				
Belted, hose and packing.....	\$6,169		\$9,937	
Boots and shoes.....	39,817		39,817	
Other tires.....	61,375		14,153	
Other rubber goods.....	14,675		83,054	
Totals.....		\$122,416		\$236,144
TO—				
Porto Rico:				
Belted, hose and packing.....	\$3,284		\$2,008	
Automobile tires.....	28,677		47,081	
Other tires.....	1,851		20	
Other rubber goods.....	7,488		1,519	
Totals.....		\$40,503		\$50,628

RUBBER STATISTICS FOR THE DOMINION OF CANADA.

The import and export figures by countries usually published in this table are withheld by the Canadian Government.

IMPORTS OF CRUDE AND MANUFACTURED RUBBER.

	1917.		1918.	
	Pounds.	Value.	Pounds.	Value.
UNMANUFACTURED—free.				
Latex.....	3,946	\$3,092		
Rubber and gutta percha crude				
caoutchouc or india rubber.....	951,389	\$52,797	1,856,491	\$763,024
Rubber, sheeted.....	182,891	29,476	191,277	33,095
Hard rubber, in sheets and rods	14,272	9,456	825	867
Rubber substitutes.....	33,036	4,174	91,351	19,384
Rubber, powdered and rubber or				
gutta percha waste.....	105,363	7,946	411,918	31,486
Rubber thread, not covered.....	1,748	2,516	2,588	3,822
Totals.....	1,292,513	\$69,387	2,554,030	\$851,638
Chicle.....	313,807	143,879	49,018	34,075

	1917.		1918.	
	Pounds.	Value.	Pounds.	Value.
MANUFACTURED—dutiable:				
Boots and shoes.....		\$18,094		\$15,176
Belted.....		6,094		18,912
Hose, lined with rubber.....		41,467		20,002
Waterproof clothing.....		13,879		10,830
Mats and matting.....		8,104		9,298
Packing.....		268,112		101,499
Tires of rubber for all vehicles.....				
Rubber cement and all manufac-				
tures of india rubber and gutta				
percha.....		88,967		113,737
Hard rubber sheets.....	14,272	9,456		
Hard rubber, unfinished, in tubes				
for fountain pens.....		16		14,231
Webbing over one inch wide.....		17,440		27,414
Totals.....	14,272	\$471,855		\$331,164

EXPORTS OF DOMESTIC AND FOREIGN RUBBER GOODS.

	1917.		1918.	
	Pounds.	Value.	Pounds.	Value.
PRODUCE OF CANADA.....				
Reexports of Foreign Goods.....				
Produced in Foreign Countries.....				
MANUFACTURED—				
Belted.....	\$6,803		\$9	
Hose.....	3,719		24,103	
Boots and shoes.....	33,822		37,321	
Jeolting.....	115		3,650	
Tires.....	99,100	4,771	73,089	\$3,596
Waste.....	56,427		2,385	
All other.....	5,239	\$67,193	9,384	11,726
Totals.....	\$165,925	\$571,964	\$149,950	\$15,322
Chicle.....	159,005		85,849	

UNITED KINGDOM RUBBER STATISTICS.

The import and export figures by countries usually published in this table are withheld by the British Government.

IMPORTS.

	1917.		1918.	
	Pounds.	Value.	Pounds.	Value.
UNMANUFACTURED—				
Crude rubber.....	10,533,300	1,294,030	8,670,600	954,006
Waste and reclaimed rubber.....	48,000	1,417		
Gutta percha.....	296,100	53,967	183,600	164,354
Totals.....	10,877,400	1,349,434	8,854,200	1,118,364
MANUFACTURED—				
Boots and shoes.....	7,419	13,869	208	792
Carriage tires and tubes.....		1,312		
Automobile tires and tubes.....		53,758		53,019
Motorcycle tires and tubes.....		2,000		1,115
Bicycle tires and tubes.....		70		
Insulated wire.....		1,309		
Totals.....	7,419	70,448	208	56,226

EXPORTS.

UNMANUFACTURED RUBBER.	1917.		1918.	
	Value.	Quantity.	Value.	Quantity.
Waste and reclaimed rubber.....	1,272.30	24,079	7,600.00	11,463
Manufactured rubber.....				
Waterproof clothing.....		6,700		1,000
Boots and shoes.....		9,322		3,000
Insulated wires.....		2,959		8,822
Submarine cables.....				45,314
Carnage tires and tubes.....		8,552		14,000
Automobile tires and tubes.....		114,423		11,021
Motorcycle tires and tubes.....		1,000		13,008
Trucks and other vehicles.....				
Other manufactures of india rubber.....		106,839		110,838
Totals.....	1,272.30	24,079	7,600.00	403,672

EXPORTS—FOREIGN AND COLONIAL.

UNMANUFACTURED RUBBER.	1917.		1918.	
	Value.	Quantity.	Value.	Quantity.
Crude rubber.....	4,558,100	577,225	2,100,000	241,914
Gutta percha.....	24,200	4,037		
Latex.....	4,582,300	581,262	2,100,000	241,914
Manufactured rubber.....				
Boots and shoes.....				
Waterproof clothing.....				
Insulated wires.....				
Submarine cables.....				
Carnage tires and tubes.....				2,760
Automobile tires and tubes.....				
Motorcycle tires and tubes.....				2,760
Trucks and other vehicles.....				

THE MARKET FOR RUBBER SCRAP.

Copyright, 1918.

NEW YORK.

THE tendency is upward, at least in some lines. The fact that makers of auto tires under six inches can now make seventy-five per cent of their former output, instead of the fifty per cent to which they have been limited for some time, is expected to have an influence on scrap prices. Shipping facilities, it is thought, will be somewhat better, which will improve the general demand.

BOOTS AND SHOES.—An increase in the movement is noticeable at, say, around, 8½ cents, while really good lots are worth 9 cents, c. i. f. mills.

INNER TUBES.—A very light demand with prices practically unchanged.

MECHANICALS.—As dull as ever, prices the same.

TIRES.—B white tires are selling at 5¼ and even 6 cents. Mixed tires cannot be had now for less than 5¼ cents.

NEW YORK QUOTATIONS FOR CARLOAD LOTS DELIVERED.

NOVEMBER 25, 1918.

Prices subject to change without notice.

BOOTS AND SHOES.			
Arctic boots.....	lb.	\$0.01½ @	.014
Boots and shoes.....	lb.	.07½ @	.085
Trimmed arctic boots.....	lb.	.07 @	.074
Untrimmed arctic boots.....	lb.	.06 @	.06½
HARD RUBBER.			
Battery jars, black compound.....	lb.	.02 @	.016
No. 1, bright fracture.....	lb.	.25 @	.26
INNER TUBES.			
No. 1, old packing.....	lb.	.22 @	.22½
new packing.....	lb.	.24 @	.24½
No. 2.....	lb.	.11½ @	.11¾
Red.....	lb.	.11½ @	.11¾
MECHANICALS.			
Black scrap, mixed, No. 1.....	lb.	.05¼ @	
No. 2.....	lb.	.04 @	
Car springs.....	lb.	.05 @	
Heels.....	lb.	.04 @	
Household pads.....	lb.	.04 @	
Hose, air-brake.....	lb.	.05½ @	.054
fire, cotton lined.....	lb.	.02½ @	
garden.....	lb.	.04 @	
Insulated wire stripping, free from fiber.....	lb.	.01½ @	
Mating.....	lb.	.09½ @	.10
Packing.....	lb.	.06 @	.06½
Red scrap, No. 1.....	lb.	.12 @	.124
No. 2.....	lb.	.09 @	
White scrap, No. 1.....	lb.	.09 @	
No. 2.....	lb.	.09 @	

TIRES.

INFORMATION				
Auto peelings, No. 1.....	lb.	.09½ @		
No. 2.....	lb.	.08½ @		.06¾
Bicycle.....	lb.	.04 @		
Standard white auto.....	lb.	.05¼ @		
Standard mixed auto.....	lb.	.05 @		
Striped, unguaranteed.....	lb.	.04 @		
White, G. & C.....	lb.	.05¼ @		
M. & W. and U. S.....	lb.	.05¼ @		
B.....	lb.	.05¼ @		.05
CARRIAGE.....				
Carriage.....	lb.	.05¼ @		
Truck.....	lb.	.02 @		
Truck.....	lb.	.05¼ @		

THE MARKET FOR COTTON AND OTHER FABRICS.

Copyright, 1918.

NEW YORK.

DUE to the signing of the armistice, to the decision of the committee not to fix prices, and to the Government's forbidding domestic and foreign short selling there have been violent fluctuations during the past month in the New York cotton market. On October 30, middling uplands was 30.75 cents, on November 25, it was 29.75 cents.

SEA ISLAND COTTON.—Market continues very quiet, with little or no cotton changing hands, such little demand as there is being at lower figures than owners are willing to accept. Every now and then small distress lots are offered, indicating that it would pay mills to send orders in force for a few days, provided they need any cotton. Average extra choice sells for 70 cents at New York.

COTTON FABRICS.—The market has been lifeless with no change in prices. Present prices on hose and belting duck will remain the same until January 1. While Government business has subsided, the mills are sold ahead on regular orders to next July, and it is not reasonable to look for change in prices for the next six months.

NEW YORK QUOTATIONS.

NOVEMBER 25, 1918.

Prices subject to change without notice.

AIRPLANE AND BALLOON FABRICS:

Wamsutta, S. A. I. L. No. 1, 40-inch.....	yard	None
No. 4, 38-inch.....	yard	\$0.47 @

ASBESTOS CLOTH:

Brake lining, 2½ lbs. sq. yd., brass or copper insert.....	lb.	.85 @
2½ lbs. sq. yd., brass or copper insert.....	lb.	.90 @

BURLAPS:

40-7-ounce.....	100 yards	11.10 @
40-7½-ounce.....		13.25 @
40-8-ounce.....		17.40 @
40-10-ounce.....		16.50 @
40-10½-ounce.....		16.50 @
45-7½-ounce.....		None
45-8-ounce.....		18.00 @
45-9½-ounce.....		22.50 @
48-10-ounce.....		

DRILLS:

40-7-ounce.....	100 yards	11.10 @
40-7½-ounce.....		13.25 @
40-8-ounce.....		17.40 @
40-10-ounce.....		16.50 @
40-10½-ounce.....		16.50 @
45-7½-ounce.....		None
45-8-ounce.....		18.00 @
45-9½-ounce.....		22.50 @
48-10-ounce.....		

DUCK:

CARRIAGE CLOTH:		
40-7-ounce.....	yard	.31 @
40-7½-ounce.....	yard	.35 @
40-8-ounce.....	yard	.40 @
40-10-ounce.....	yard	.45 @
40-10½-ounce.....	yard	.45 @
45-7½-ounce.....	yard	.45 @
45-8-ounce.....	yard	.45 @
45-9½-ounce.....	yard	.45 @
48-10-ounce.....	yard	.45 @

MECHANICAL:

Hose.....	lb.	1.62 @
Belting.....	lb.	1.64 @
Belting.....	lb.	1.64 @

HOLLANDS, 40-INCH:

Acme.....	yard	.30 @
Endurance.....	yard	.33 @
Penn.....	yard	.34 @

THE MARKET FOR CHEMICALS AND COMPOUND- INGREDIENTS.

Copyright, 1918.

NEW YORK.

HESITATION and dullness were the characteristics of the base metal market. The government and the copper producers have agreed that the maximum price for copper shall remain at 26 cents for the rest of the year; it is said that orders have been accepted at lower figures for delivery next year. The War Industries Board has announced a universal control of tin; in this country the metal can only be obtained from the American Iron and Steel Institute. Import licenses are to be issued only to the United States Steel Products Co., which puts importers in the United States and Canada out of business until further notice. The Lead Producers Committee continues its control of lead and the output is oversold. Antimony, which has been dull for some time, has fallen still further.

The market for rubber chemicals is in a state of uncertainty, there is a little depression, but, with the coming of peace, a considerable revival is hoped for.

ANILINE OIL.—There is a very strong demand, which producers are able to satisfy, but there are no large stocks on hand.

BARYTES.—Consumption continues to be about half the former average, but the cost of production is still so high that prices are unchanged.

CARBON TETRACHLORIDE.—As government control has not yet ceased, this product is practically unobtainable in the open market.

LITHOPONE.—Manufacturers, who have for some time been able to sell easily all they could make and at very good prices, are looking forward to a large export trade. Stocks on hand, as reported to the Lithopone Institute, are less than 25 per cent of what they used to be.

SULPHUR FLOUR.—There are many inquiries for delivery next year, the tendency seems to be toward lower prices on account of the coming of peace.

SULPHURIC ACID.—Producers are still unable to meet the demand, as there has as yet been no relaxation of government regulation.

TALC.—Many months will probably pass before any imported talc is obtainable in this country and there is a strong demand for the domestic product.

TAR AND PITCH.—The demand has weakened somewhat, which is not quite what had been expected on the signing of the armistice.

WHITING.—Producers can still scarcely meet all the demands for government work. Whiting is not easy to get in the open market, and yet there have been some cancellations of orders by the rubber trade.

ZINC OXIDE.—The market continues quiet and prices unchanged.

NEW YORK QUOTATIONS.

NOVEMBER 25, 1918.

Prices subject to change without notice.

ACCELERATORS, ORGANIC.

Accelerator N. C. C.	lb.	50	@
Accelerene	lb.	\$2.62	@
Accelmal	lb.	.80	@
Accelmal No. 2	lb.	.80	@
Accelerator No. 1	lb.	.60	@
Aldehyde ammonia crystals	lb.	1.00	@ 1.10
Aniline oil	lb.	.125	@
Amex	lb.	.75	@
Duplex	lb.	.85	@
Excellerex	lb.	.85	@
Hexamethylenediamine (Vitalin)	lb.	1.25	@
Hexamethylene tetramine (powdered)	lb.	1.05	@ 1.20
Paraphenylenediamine	lb.	3.50	@ 4.00
Tensile	lb.	.60	@
Theocarbanilide	lb.	.50	@
Velocite	lb.	.50	@
Vitaminex	lb.	.65	@

ACCELERATORS, INORGANIC.

Lead, dry, red	lb.	.11 1/2	@
sublimed blue	lb.	.09 1/4	@
sublimed white	lb.	.09 1/4	@
white, base, carbon	lb.	.10	@ 10 1/2
white, base sulphate	lb.	.09 1/4	@ 09 1/4
Lime, flour	lb.	.01 1/4	@ .02
Litharge, domestic	lb.	.12 1/4	@ .14
luggish	lb.	.12	@
sublimed	lb.	.11	@
Magnesium carbonate	lb.	.14	@
calcined, heavy (Thistle brand)	lb.	.12	@
light (Manhattan brand)	lb.	.50	@
Magnesium oxide	lb.	.06 1/2	@
Magnesite, calcined, powdered	ton	50.00	@ 65.00

ACIDS.

Acetic, 28 per cent (bbbs.)	cwt.	4.91	@
citric, 80 per cent (carboys)	cwt.	19.50	@
Cresylic, 97-99 per cent, straw color	gal.	1.12	@
95 per cent, dark	gal.	1.02	@
Muriatic, 20 degrees	cwt.	2.05	@ 2.30
Nitric, 36 degrees	cwt.	6.60	@ 6.85
90 per cent, dark	cwt.	2.60	@

ALKALIES.

Caustic soda, 76 per cent (bbbs.)	lb.	.08	@
Soda ash (bbbs.)	lb.	.04 1/2	@

COLORS.

Black:			
Bone, powdered	lb.	.05	@
granulated	lb.	.09	@
Carbon, black (sacks, factory)	lb.	.14	@
Ivory black	lb.	.10	@ .30
Lampblack	lb.	.15	@ .45
Oil soluble aniline	lb.	.75	@ 1.50
Rubber black	lb.	.07	@

Blues:

Cobalt	lb.	.25	@ .35
Prussian	lb.	\$1.25	@
Ultramarine	lb.	.22	@ .50

Browns:

Iron oxide	lb.	.03	@ .04
Ochre, domestic	lb.	.01 1/2	@ .04
imported	lb.	.05 1/4	@
Sinners, Italian, raw and burnt	lb.	.16	@
Umber, Turkey, raw and burnt	lb.	.05	@ .06

Greens:

Chrome tile	lb.	.15	@
Oxide of chromium (casks)	lb.	.85	@
India rubber	lb.	.75	@

Red:

Antimony, crimson, sulphuret of (casks)	lb.	.50	@
crimson, "Mephisto"	lb.	.60	@
Antimony, golden, sulphuret of (casks)	lb.	.25	@
golden, "Mephisto" (casks)	lb.	.30	@
golden, sulphuret, States brand, 16-17% S.	lb.	.25	@
red sulphuret, States brand	lb.	.25	@
vermillion sulphuret	lb.	.55	@
Arsenic, red sulphide	lb.	.42	@
Indian, pure bright	lb.	.08	@ .12
Iron oxide, reduced grades	lb.	.12	@
pure bright	lb.	.16	@
Oil soluble aniline, red	lb.	\$2.50	@ 3.00
orange	lb.	\$2.00	@
Oxymony	lb.	.18	@
Venetian	lb.	.02 1/4	@ .06
Vermilion, English, pale, medium, dark	lb.	2.00	@ 2.10

White:

Aluminum bronze powder	lb.	.80	@
C. P. (cases)	lb.	1.00	@
superfine	lb.	1.25	@
Lithopone, imported	lb.	.None	@
domestic	lb.	.08	@ .08 1/4
Pencilite (carloads, factory)	lb.	.08	@ .08 1/4
Rubber makers' white	lb.	.08	@ .08 1/4
Zinc oxide, Horseshoe (less carload, factory):	lb.	.10 1/2	@
"XX red"	lb.	.11	@
"Specul"	lb.	.13 1/4	@
French process, red seal	lb.	.13 1/4	@
green seal	lb.	.13 1/4	@
white seal	lb.	.14 1/4	@
States brand	lb.	.10 1/2	@
Zinc sulphide, pure	lb.	.None	@

Yellow:

Cadmium, tri sulphate	lb.	\$2.68	@
sulphide	lb.	1.80	@
Chrome, light	lb.	.26	@ .32
India rubber	lb.	\$1.00	@
Ochre, light or dark	lb.	.05	@ .06
Oil soluble aniline	lb.	\$2.00	@
Zinc chromate	lb.	\$5.00	@

COMPOUNDING INGREDIENTS.

Aluminum flake (bbls. factory. Less 5% carload)	ton	26.00	@
(sacks factory. Less 5% carload)	ton	26.00	@
Aluminum oxide	lb.	.18	@
Ammonia carbonate, powdered	lb.	.13 1/2	@ .14
lumps	lb.	.13 1/2	@ .14
Asbestos (bags)	ton	25.00	@
Asbestos (bags)	ton	\$25.00	@ 35.00

Barium, carbonate, precipitated.....lb.	.03	@	
sulphide, precipitated.....lb.	.08	@	
Barytes, pure white.....ton	35.00	@	
off color.....ton	35.00	@	
uniform floated.....ton	35.00	@	
Basor.....lb.	.05 1/2	@	
Blanc fixe.....lb.	.05 1/2	@	.06
Bone ash.....lb.	.06	@	
Chalk, precipitated, extra light.....lb.	.05	@	.05 1/4
precipitated, heavy.....lb.	.04	@	.04 1/4
China clay, domestic.....ton	15.00	@	22.00
imported.....ton	.02	@	
Cotton linters, clean mill run, f. o. b. factory.....bale	None	@	
Fossil, flour.....ton	60.00	@	60.00
Glue, high grade.....lb.	.35	@	.40
medium.....lb.	.25	@	.30
low grade.....lb.	.15	@	.20
Graphite, flake (400 pound bbl.).....lb.	.10	@	.25
amorphous.....lb.	.04	@	.08
Ground glass FF. (bbls.).....ton	.63	@	
Infusorial earth, powdered.....ton	65.00	@	
Mica, powdered.....lb.	.03 1/2	@	
Plaster of Paris.....lb.	2.00	@	3.00
Plastum.....lb.	.05	@	
Pumice stone, powdered (bbl.).....lb.	.05	@	.06
Roten stone, powdered.....lb.	.02 1/2	@	.04 1/2
Rubber flux.....lb.	.15	@	
Rubidite.....lb.	.38	@	
Silex (silica).....ton	22.00	@	40.00
Soapstone, powdered, domestic.....ton	22.50	@	25.00
imported.....ton	None	@	
Starch, powdered corn (carload, bbls.).....cwt.	4.27	@	
(cashmere, bags).....cwt.	4.05	@	
Talc, American.....ton	20.00	@	40.00
French.....ton	None	@	
Tripoli earth, powdered.....lb.	.01	@	
Tyre-lith.....ton	20.00	@	
Walpole rubber flux (factory).....lb.	.06	@	1.00
Whiting, Alaba. (carloads).....cwt.	.90	@	
commercial.....cwt.	1.50	@	
solders.....cwt.	1.75	@	
Paris, white, American.....cwt.	1.50	@	
English clifstone.....cwt.	1.50	@	
Wood pulp XXX.....ton	*40.00	@	45.00

MINERAL RUBBER.

Gilsonite.....ton	55.00	@	57.50
Genasoc (carloads factory).....ton	55.00	@	57.00
M. R. N.....ton	100.00	@	
Liquid rubber.....lb.	.14	@	.15
Pioneer, carloads, factory.....ton	50.00	@	
less carload, factory.....ton	55.00	@	
Richmond.....ton	75.00	@	
Refined Elatrite.....ton	175.00	@	
Raven M. R.....ton	100.00	@	

OILS.

Corn, crude (bbls.).....lb.	.18	@	1.75
refined.....lb.	.21 1/4	@	
Glycerine (C. P. drums).....gal.	.12	@	.59
Glycerole.....gal.	.12	@	
Linseed, raw (carloads).....gal.	1.00	@	
refined.....gal.	.85	@	
Linseed compound.....gal.	.82	@	.50
Palm.....gal.	.10	@	.41
Paraffin.....gal.	.10	@	
Petrolatum.....lb.	.10	@	
Petroleum grease.....gal.	.07	@	
Pine, steam distilled.....gal.	.10	@	
Pine tar.....gal.	.10	@	
Rapeseed, refined.....gal.	.10	@	
blown.....gal.	.10	@	
Rosin.....lb.	.15	@	
Soya bean, crude (f. o. b. Pacific Coast).....lb.	.15	@	
Tar, commercial (cases).....gal.	.65	@	
Noreacol No. 30.....gal.	.65	@	

SOLVENTS.

Acetone (drums).....lb.	25.00	@	25.00
methyl alcohol.....lb.	1.75	@	
Benzol, C. P. (drums).....gal.	.22	@	.27
Beta-naphthol, recrystallized.....lb.	.10	@	
ordinary grade.....lb.	.10	@	
Hsloway oil No. 1000 (f. o. b. Wyandotte).....lb.	.10	@	
No. 1001 (f. o. b. Wyandotte).....lb.	.10	@	
Naphtha, motor gasoline (steel bbls.).....gal.	.24 1/2	@	
73 @ 76 degrees (steel bbls.).....gal.	None	@	
68 @ 70 degrees (steel bbls.).....gal.	None	@	
sulphur.....gal.	.23 1/2	@	
V. M. & P. (steel bbls.).....gal.	.23 1/2	@	
Toluol, pure.....lb.	.10	@	.11
Turpentine, spirits.....lb.	.10	@	
Venice.....lb.	.10	@	
Osmao reducer.....gal.	.45	@	.50
Zyloil, pure.....gal.	.30	@	.35
commercial.....gal.	.30	@	

SUBSTITUTES.

Black.....lb.	.11	@	.18
White.....lb.	.13	@	.25
Brown.....lb.	.18	@	.24
Brown factice.....lb.	.10	@	.23
White factice.....lb.	.14	@	.24

Cordex.....lb.	*.45	@	
Energiner.....lb.	*.30	@	
Paragol soft and medium (carloads).....cwt.	17.08	@	
hard.....cwt.	16.50	@	
Toughenite.....lb.	.40	@	

VULCANIZING INGREDIENTS.

Carbon, bisulphide (drums).....lb.	.08	@	.10
tetrachloride (drums).....lb.	.50	@	
Lead, black hyposulphite (Black Hypo).....lb.	.47	@	.60
Orange mineral, domestic.....lb.	1.44	@	
Sulphur chloride (drums).....lb.	.05	@	.10
Sulphur, flour, Brooklyn brand (carloads).....cwt.	3.40	@	
pure soft (carloads).....cwt.	3.40	@	
superfine (carloads, factory).....cwt.	2.50	@	
(See also Colors, Antimony).....cwt.	2.50	@	

RESINS AND PITCHES.

Castella gum.....lb.	.75	@	
Pine tar, retort.....bbl.	16.00	@	
kiln.....bbl.	16.00	@	
Pitch, Burgund.....lb.	.18	@	.19
oil tar.....lb.	.18	@	.19
baltic tar.....lb.	.18	@	.19
ponto.....lb.	.18	@	.19
Resin, Pontianak, refined.....lb.	None	@	
granulated.....lb.	None	@	
tased.....lb.	None	@	
Rosin, K.....lb.	17.50	@	
powdered.....lb.	17.50	@	
Shellac, fine orange.....lb.	.12	@	.50
Tar, kiln.....bbl.	13.00	@	13.50
retort.....bbl.	14.00	@	14.50

WAXES.

Wax, beeswax, white.....lb.	.78	@	.80
cresin, white.....lb.	.20	@	.22
carnauba.....lb.	.60	@	.60
ozokerite, light.....lb.	.58	@	.60
green.....lb.	.75	@	.80
montan.....lb.	.40	@	.50
sulphurite.....lb.	.20	@	.30
paraffin, crude 118/120 m. p. (cases).....lb.	.09 1/4	@	.10
124/126 m. p. (cases).....lb.	.10 1/4	@	.11
refined 128 m. p. (cases).....lb.	.12 1/4	@	.13
130 m. p. (cases).....lb.	.13	@	.16

*Nominal.

THE GRACE COMPANY IN THE FAR EAST.

Grace Brothers, Limited, importers of crude rubber, London, England, have acquired an interest in Lee, Hodges & Co., an old-established house of Colombo, Ceylon, which gives increased facilities for the purchase of Ceylon commodities and for the export of the company's English and American products to the markets of Ceylon and India.

A new agency has also been established by Grace Brothers, Limited, London, at Freetown, Sierra Leone, British West Africa, conducted as Grace Brothers & Co., Limited, with H. T. Wittington in charge as agent. Business will also be conducted in the British and French colonies north and south of this point.



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of all kinds—tensile strength, plasticity,
durability, heating tests, etc. And experi-
ment work.

ERICK J. MAYWALD, F.C.S.
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Edited by HENRY C. PEARSON

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JANUARY 1, 1919

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"BUSINESS as Usual?" Not a bit of it! This Year of Our Lord, now that "Gott" has abdicated, promises to be the biggest, best and happiest for generations. And the rubber trade? Just watch it grow.

THE YEAR IN REVIEW.

TO detail all of the notable and interesting happenings in the rubber trade for the last twelve months is a task that would seriously infringe the paper conservation rules. A bird's-eye view, however, shows the industry passing through lightning-like changes, from unpreparedness to readjustment, to contraction, to practical stoppage except for war work, and then to reconstruction.

Although in January a year ago, the industry was unprepared, individuals in the trade were already in the thick of the fight. Many adventurous and patriotic young men were in service as volunteer soldiers, aviators and ambulance drivers. Many "dollar a day" men were holding down important positions in Washington as organizers and experts. Industrial engineers, chemists and mechanics, were already leaving rubber and filling necessary places in war work plants. Then followed the volunteers and the drafted men, from office and factory

all over the country, by thousands and by ten thousands. No doubt the year will be known as a year of victory, but it is much else. It was a year of conservation, in rubber, coal, daylight, sulphur, gasoline, in almost everything except air and water. Manufacturers conserved labor and for the first time, woman became a great and helpful factor in rubber-manufacturing plants. Conservation in the line of investment was not, however, practiced. There were the four Liberty Loans, in each of which the trade went over the top, rubber men subscribing millions, promptly and generously. Then there were the gifts to the Red Cross, to the War Workers, to the French, Belgian, Armenian and other orphan funds, not to forget the investment in Thrift Stamps and War Saving Certificates.

With it all, through capable, hard working committees at home, rubber goods used in war work were standardized and turned out in quantities never before thought possible. New methods, new devices, and new compounds were created over night. With the scrapping of old methods, the dropping of "non-essentials" and the putting of big plants on a war basis, there was no disorganization. On the contrary the most wonderful organization that any industry has ever seen was created. To sum up—it was a good fight, cheerfully and efficiently fought, and 1918 is a year of which the trade may well be proud.

THE VICTORY BANQUET.

THE Annual Banquet of the Rubber Association of America to be held on the evening of January sixteenth, promises to be the most notable gathering that the trade has ever seen. Never before has it been so firmly knit in the bonds of successful effort, friendship and patriotism. Not again will there be available such an array of speakers afire with vital facts and thrilling anecdote. The times teem with problems of vast import. It is not idle prophecy to predict that in the speeches will be sounded the key-note of the great reconstruction that is already well begun.

AN ERA OF TRUSTS IN SIGHT.

THAT Germany to win back her place in the sun, even if it be under an umbrella of debt, will be and is already organized into a series of trusts, is to be expected. But that other European countries should be leaning somewhat the same way is surprising. Leaning is too mild, they are openly advocating amalgamations that will give quantity production, and that, assisted by government, will put them beyond the reach of ordinary competition. France and Italy are already planning extensive reconstruction in manufactures assisted by their respective governments. But it is in Great Britain that the promise of great trusts and amalgamations is noted. No less an authority than the Right Honorable Sir Albert Stanley, M. P., president of the British Board of Trade,

in a notable address before the Industrial Reconstruction Council, recently said:

It appears to me, therefore, that one of the first problems that we have to solve, and one to which the most earnest attention of manufacturers must be directed, is such an organization of industry as will make possible the complete overhauling of our industrial equipment, and establish large-scale production in all cases where it is economically advantageous, whilst in no way checking individual initiative and enterprise. How that result may best be attained, whether by the consolidation of companies or firms engaged in identical or allied branches of production, or by other forms of cooperation, is a matter primarily for those concerned in the industries themselves to determine; but I do say that considerable development of the kind is essential, especially in view of the competition of the great industries of other countries, particularly, the United States and Germany, which started from a much later stage in the world's industrial knowledge and experience, and have consequently been less influenced by tradition and less handicapped by works not up to modern standards.

That the British have ever been great and enterprising merchants none can deny. They have also been honest and above board in their merchandizing. If now they use in manufacture the conspicuous ability shown in quantity production of war material they will indeed be competitors hard to beat. Of course no great British rubber trust has yet appeared, but something of the sort is in the minds of those who plan to preserve the English industries.

A FRIENDLY MESSAGE FROM BRITAIN.

IN another column will be found a most timely and friendly letter from the Association of Rubber Manufacturers whose headquarters are in London. It is a vote of confidence in the integrity of the American rubber trade, and as such is a merited rebuke for those who for personal gain or perhaps from motives more sinister, strive to make trouble between the two great English-speaking countries. Such efforts if continued by the short-sighted, the selfish, and the prejudiced on either side of the water, will have little effect hereafter, at least in the rubber trade.

RUBBER RESTITUTION.

THE rubber trade of Germany may or may not have been in sympathy with the aims of the Prussian War Lords. From no individual in it, however, has come the slightest protest or hint of disagreement with the policy of destruction and frightfulness visited upon the French, Belgians, and Russians. Not only that, but according to reports, the rubber mills in occupied territories were dismantled and the stocks and machinery sent to Germany. In any equitable peace adjustment, the mills should be rebuilt, new machinery installed, and stocks replenished, if not by the German Government, then by the German rubber manufacturers. We could wish for the good of their souls that they do this voluntarily,

but that is perhaps too much to hope for. At all events, willingly or unwillingly, it should be done.

ALLOCATING GERMAN CRUDE RUBBER.

THAT Germany may pay her gigantic debts she must run her factories to the limit. To do this, certain raw materials controlled by the Allies are necessary. Of these is rubber. To be sure there are two opinions regarding the scarcity of rubber in Germany. One belief is that nothing but a poor grade of reclaim is to be found in all Teutonia. The other claims that by the development of synthetic rubber, and by the extraction of rubber from certain weeds and shrubs indigenous to Germany and Austria-Hungary, no great scarcity exists. Be that as it may, the cards will soon be on the table and these obscure points cleared up.

Before the war the Central Powers used some 20,000 tons of crude rubber, and a greater number of tons of reclaimed rubber. Supposing the needs for home consumption and such export trade as is still pro-German remain about as above, will Germany be allowed to go into the open market and purchase as much as she needs, and will ships be furnished to transport it? Or is it to be passed through Allied hands and allocated? This is a somewhat interesting question to planters, producers, and more remotely, to rubber manufacturers.

THOSE WHO APPRECIATE THE TEUTONIC LACK OF inventiveness are skeptical regarding the peace value of the floods of substitutes that war has forced them to develop and use. As far as the rubber industry is concerned the interest centers about synthetic rubber and cotton substitutes. With regard to the first there is no probability that it will have commercial value in times of peace, while the second may or may not be worth consideration. That the Allies refuse to grant protection to these or other war products would be only fair to a world impoverished by German greed. That is, unless a recreated Germany extends protection to Allied inventions.

JOINT ACTION ON THE PART OF THE USERS OF RAW materials is earnestly advocated by European publicists. If this crystallized into action it would mean cooperative buying of crude rubber either through government or a purchasing syndicate. If England, France, and the rest of the big European countries thus assured themselves of their crude rubber supply, would manufacturers in the United States buy as individuals what is left, or would they also buy, perhaps through The Rubber Association of America?

THERE ARE 2,000,000 ACRES OF PRODUCING CULTIVATED rubber trees in the world. Of these 1,600,000 acres are under British control. The market value of the shares representing this immense acreage was in August last, according to the London "Times," \$750,000,000.

Echoes of the Great War.

Function of the War Trade Board. Revised Procedure for Licensing Exports to or Through Allied Countries. The War Trade Board of the United States Russian Bureau, Inc. New Export Conservation List. Individuals Named as Enemies in President's Proclamation. More Athletic Goods for Men in Service. Jeannette War Service Activities to Continue. Service Notes and Personals.

FUNCTION OF THE WAR TRADE BOARD.

SPEAKING of the functions of the War Trade Board for the present and immediate future, Vance C. McCormick, chairman, said recently:

The War Trade Board has a function to perform until the peace treaty is signed. Under the terms of the armistice the blockade of the enemy countries is maintained, and the control over exports and imports is to be exercised.

Sufficient tonnage must be conserved by this control to supply the needs of our two million troops overseas, to guarantee them all possible protection and bring them safely home. There must be protection assured our Allies and the distressed and needy nations of Europe in the matter of supplies. When this work has been done, international trade can be quickly restored. Pending that time I have every confidence that the patriotism and justice of the American people will have them exercise patience until these vitally important plans are worked out and normal trade is resumed.

In the meantime the War Trade Board, in cooperation with the Allies, is relaxing just as far as possible every restriction which does not conflict with the above policy.

REVISED PROCEDURE FOR LICENSING EXPORTS TO OR THROUGH ALLIED COUNTRIES.

The War Trade Board announces the adoption of a simplified procedure effective for the issuance of export licenses for shipments which are:

(A) Destined to the United Kingdom, France, Italy, or Belgium (excluding their colonies, possessions, and protectorates), either directly or by way of any other country or colony; or

(B) Destined to any country or colony by way of the United Kingdom, France, Italy, or Belgium, excepting shipments destined to Switzerland by way of Italy.

The changes in the procedure are:

That holders of orders for export to the destinations and in the manner mentioned above in paragraphs (A) and (B) will be permitted to purchase or otherwise acquire or commence to manufacture or produce or fit the articles specified in the application for the fulfillment of a specific export order prior to the issuance of an export license.

That applications for licenses to export to the destinations and in the manner mentioned above in (A) and (B) will no longer be referred by the War Trade Board to the War Industries Board.

(1) Applications for licenses to export any commodities to the destinations and in the manner mentioned above in (A) and (B) must include one of each of the following papers properly executed:

(a) Application Form X, to which should be attached

(b) Such Supplemental Information Sheets as may be required by the rules and regulations of the War Trade Board to be used in connection with shipments of certain commodities or shipments to certain countries (such as Form X-1, X-2, etc.).

(c) A new Supplemental Information Sheet, Form X-122, in place of Form X-115.

(2) In Form X-122 the applicant is required to show that permission to import or purchase (if such permission is required) has been duly granted by the government of the allied country to or through which the shipment is to be made.

(3) Applications filed with Form X-122 attached should be mailed directly to the War Trade Board, Washington, D. C.

They will then be referred by the War Trade Board to the War Mission of the allied country to or through which shipment is to be made.

(4) This simplified procedure will relieve applicants for export licenses from giving certain information and making certain agreements as formerly prescribed on Form X-115.

THE WAR TRADE BOARD OF THE UNITED STATES RUSSIAN BUREAU, INC.

This company has been organized by the War Trade Board at the direction of the President of the United States to aid in supplying the needs of the people of Russia, in encouraging Russian production and trade, and assisting in the marketing of Russian products in America and their exchange for American goods, for the purpose of helping the Russians to help themselves in stabilizing the economic situation in Russia. It has a capital stock of \$5,000,000, all of which has been issued and fully paid in cash out of government funds. The stock is owned in its entirety by the United States Government.

The company will engage in the business of exporting to Russia and Siberia agricultural implements, shoes, clothing, and other commodities which the Russian population need, and of importing Russian and Siberian raw materials in return. One of the chief objects will be the encouragement of private capital to engage in trade in Russia and Siberia as shipping becomes available for the purpose. The policy will be to cooperate with, encourage and promote such trade with Russia as will assist in the rehabilitation of her economic life, and to cover by direct operations only such portions of the field as cannot at present be served readily by private enterprise.

The head office of the Russian Bureau is in the War Trade Board Building at Washington, D. C. The board of directors of the company consists of the members of the War Trade Board. Hon. Vance C. McCormick, chairman of the War Trade Board, is president of the company; John Foster Dulles is secretary and treasurer, and Henry B. Van Sinderen is acting manager. The directors are Vance C. McCormick, Thomas L. Chadbourne, Jr., Edwin F. Gay, Albert Strauss, Alonzo E. Taylor, J. Beaver White, and Clarence M. Woolley.

NEW EXPORT CONSERVATION LIST.

The new list effective December 20, 1918, superseding all previous lists, includes the following items of rubber interest. Shippers are reminded that individual licenses are required for shipment of all commodities covered by the export conservation list to all countries, including Canada and Newfoundland: Crude rubber, guayule, balata, gutta percha, gutta siak, jelutong, reclaimed rubber, scrap rubber, burlap, aniline oil, corn oil, gasoline, naphtha.

INDIVIDUALS NAMED AS ENEMIES IN PRESIDENT'S PROCLAMATION.

The President of the United States has designated the following persons as included within the term "enemy," under the Trading-with-the-Enemy Act: Charles Duisberg, Christian Hess, and Rudolph Mann, of Leverkusen, Germany; A. W. Faber, Stein, Germany; H. Otto Traun, Hamburg, Germany; Paul Mecke, Heppel Leop. Estate of Von der Heide, and Bitumen Wundersche, all of Unna, Germany; H. Rost & Co., Dr. F. Lampert, Mrs. Anna L. Lampert, Mrs. Caroline Soltan, and Mrs. Olga J. C. Schrumph, all of Hamburg, Germany; and Robert Bosch and associates, of Stuttgart, Germany.

MORE ATHLETIC GOODS FOR MEN IN SERVICE.

During the past year contracts for athletic equipment amounting to \$795,000 have been awarded by the War Department Commission on Training Camp Activities. The last contract, awarded in November, called for the following items of interest to the rubber trade: 5,400 medicine balls, 6,000 Rugby footballs, 12,000 soccer footballs, 3,000 Rugby bladders, 6,000 soccer bladders, 18,000 playground balls and 3,000 basket-balls.

There is still about half a million dollars available for further expenditures and the Commission is inclined to enlarge the shipments of their supplies rather than otherwise. It is realized that the armistice increases the need for athletic supplies, as the let-down will be severe unless particular effort is made to maintain the morale of the men.

JEANNETTE WAR SERVICE ACTIVITIES TO CONTINUE.

Jeannette, Pennsylvania, does not intend to neglect the future welfare of returning soldiers and their dependents now that the war is over. The Jeannette War Service Union prides itself on having, in a little city of only 12,000 inhabitants, over 4,200 monthly contributors and no delinquents. The president, Seneca G. Lewis, general manager of the Pennsylvania Rubber Co., states that although the Union has a fund exceeding \$15,000 in the treasury, after meeting all possible contingencies in connection with war work, it is intended to continue indefinitely in order to safeguard absolutely all returning men who may need assistance.

Looking Backward—and Forward.

What Men Prominent in the Trade Say of the Year's Happenings.

FROM IMPORTANT MEMBERS OF THE WAR SERVICE COMMITTEE.

THE consensus of opinion appears to be that with the complete withdrawal of government control and supervision the rubber industry is about to enter a period of great expansion and prosperity in which wartime conservation and standardization will prove a beneficial influence; that the necessary readjustments will be effected with comparative ease, and that the inevitable cancellations of government contracts will work no great hardships because of the volume of long-standing orders for normal business in most lines of rubber goods.

BOOT AND SHOE DIVISION.

GEORGE H. MAYO, CHAIRMAN.

"The footwear division of the War Service Committee of the Rubber Industry worked in the closest harmony throughout the war, and one and all contributed patriotically to the service of the Government. There seems to be much that could properly be done under peace conditions for the welfare of the industry and I am in hopes it will seem wise to the committee to continue some of the constructive work that has been undertaken by them."

CLOTHING DIVISION.

N. LINCOLN GREENE, CHAIRMAN.

"During the period of the war we have given to the Government our capacity, and more, and with the abrupt cancellation of government contracts, will naturally find it somewhat difficult to readjust production to a normal basis, although we fully expect to get from under such a condition at an early date.

"In our opinion, the cessation of the war will not be the cause of great reduction in prices, for such goods as we will market for the coming season are based on what we would term the peak of prices in labor, materials, and findings.

"The experience and advantage that has been gained through a classification of various types of business into committees under the supervision of the War Industries Board will be of great benefit in shaping policies for the future, having always

SERVICE NOTES AND PERSONALS.

While the majority of the sons of the rubber men will soon return home and resume their pre-war occupations, others will continue to wear khaki. Of the last-named type is Lieutenant-Colonel Fred Garcin, now stationed at San Francisco, but likely at any moment to be sent overseas, perhaps to Siberia, or to any of the scores of places in Central Europe where Uncle Sam's Regulars are in more or less temporary control. For Colonel Garcin is of the Regular Army, having chosen this profession some four years before the war began. Furthermore, he joined the Artillery, which branch of the service has shown such notable advancement in the past four years, and has called for the severest sort of scientific attainment. The fact that Mr. Garcin was advanced from the grade of second lieutenant to that of lieutenant-colonel testifies to his ability as an officer. Incidentally, he is the youngest officer of his rank in the service. It is interesting to note that he is the only son of Edward H. Garcin, long known as a prominent manufacturer of mechanical rubber goods and asbestos and rubber specialties.



LIEUTENANT-COLONEL
F. R. GARCIN.

the grade of second lieutenant to that of lieutenant-colonel testifies to his ability as an officer. Incidentally, he is the youngest officer of his rank in the service. It is interesting to note that he is the only son of Edward H. Garcin, long known as a prominent manufacturer of mechanical rubber goods and asbestos and rubber specialties.

in mind the thought of conservation; it having been clearly shown that many articles and many of the minor details that have been treated as essential in the past might be easily dispensed with.

"It is our opinion that there will be some months of depression, to be followed by the largest and most active business ever known to our industry."

CRUDE RUBBER AND KINDRED PRODUCTS DIVISION.

CHARLES T. WILSON, CHAIRMAN.

"The War Trade Board will continue to exercise their control over crude rubber until actual peace is declared. Therefore, the duties of the division in carrying out their instructions in respect to their various regulations will be likely to go on until this time."

FOREIGN TRADE DIVISION.

E. H. HUXLEY, CHAIRMAN.

"With the close of the war we find ourselves free to develop our export trade without the ball and chain of government control being dragged after us. This is a great relief, but we still have serious problems to solve.

"Shall we be able to hold the trade that has come to us with so little foreign competition, and shall we be able to increase it? We are now confronted with a period when competition will be free and open to all, and when it will not be confined to our fellow-American manufacturers, but to the tried and experienced exporting manufacturers of Europe. With anything like equal conditions we shall be successful competitors. To make the conditions equal, however, we must have reasonably equal labor conditions and rates of pay; reasonably equal facilities for shipping and reasonably equal rates; and, also, access to and prices for raw materials on a par with our foreign competitor. Optimists believe that we shall have these equalities, and it is not difficult to be an optimist. There is much to be accomplished to bring about the result, but there appears to be no reason to doubt that it will come. We cannot, of course, overlook that most important feature, namely, manufacturing methods, but no one

doubts the ability of the United States to compete on this score, for the ingenuity, resourcefulness and initiative of the American manufacturer are proverbial.

"The closing of the war cannot help being beneficial, and with the many advantages of the position in which the United States finds itself, optimism would appear to be thoroughly justified in contemplating the future."

GAS DEFENSE DIVISION.

DR. W. C. GEER, CHAIRMAN.

"The Gas Defense Division of the War Service Committee of the Rubber Industry has spent considerable time during the past year in assisting the Gas Defense Service of the War Department in writing their specifications for the various rubber parts of gas-masks. We have cooperated with them in the development of design, compounding, and manufacturing methods, and a large amount of work has been done.

"Since the gas-mask is purely a war munition, the ending of the war means the closing of the work and, therefore, as soon as the orders from the Gas Defense Service ceased, due to the signing of the armistice, the work of the Gas Defense Division of the War Service Committee also ceased. There is nothing more for us to do."

HARD RUBBER DIVISION.

H. WEIDA, CHAIRMAN.

"For the past eighteen months practically all the hard-rubber manufacturers were making hard-rubber parts for war essentials, requiring from 60 to 95 per cent of their total output, and due to the governmental needs it was necessary to refuse to take orders for the regular commercial lines which were enjoyed before the war.

"Now that the war is over, every effort is being made to put the industry back on a peace basis, with the idea of again serving our customers with the same dispatch as before the war.

"The future of the hard-rubber industry is very promising, and with the increased manufacturing facilities of the United States, brought on by the war, and the constant new uses to which hard rubber can be profitably put, together with the possibility of supplying the European countries with the same line furnished them by Germany before the war, I am sure that the very best years in the history of the industry are before us."

INSULATED WIRE AND CABLE DIVISION.

WALLACE S. CLARK, CHAIRMAN.

"The cessation of active hostilities has meant the suspension of manufacture and the probable ultimate cancellation of orders for some \$30,000,000 worth of insulated wire and cable.

"The first effect of this will be to allow many long-standing orders for the smaller sizes of commercial rubber-insulated conductors to be manufactured and shipped by manufacturers. Secondly, it should allow the replacement of depleted stocks throughout the country.

"It is felt by the division that this activity will largely carry the manufacturers over the pause before the return of normal business. In so far as the division has gone into this matter, the attitude of the various government departments concerned in the termination of existing contracts has been fair and reasonable."

MECHANICAL GOODS.

E. S. WILLIAMS, CHAIRMAN.

"The ending of the war finds the Mechanical Goods Division of the War Service Committee in the position of not having received official notification of the approval of the various recommendations this committee made with regard to conservation and standardization of mechanical goods. The committee submitted a questionnaire to all mechanical-goods manufacturers and after due consideration, somewhat prolonged by the complexity of the subject, a number of recommendations were made to the Conservation Division of the War Industries Board last summer. These recommendations cover a maximum number of goods, allowable for belting, steam hose, water hose, and many other lines.

"The mechanical-rubber business has been built up on a multiplicity of styles and grades of goods, each produced to meet particular conditions of competition and use. It is felt that while there are great difficulties in the way of a standard maximum number of grades, still, a great deal of good would be accomplished by the adoption of some such standards. The Conservation Division appeared to favor the recommendations made, but for one reason and another official sanction and promulgation was delayed and the signing of the armistice found the matter still pending.

"It is now hoped that the benefit of the work already done will not be lost, and that the regular organization of the Rubber Association will take up the matter and make such modifications as seem advisable under peace conditions and try to bring about an agreement on the subject which will be beneficial to all."

MEDICAL RUBBER GOODS AND SUNDRIES DIVISION.

A. W. WARREN, CHAIRMAN.

"The ending of the war necessarily caused the cancellation of many large contracts from the medical department of the United States Army, and while these contracts are now pending adjustment, it is not thought among the trade that the sudden discontinuation of the placing of large orders will in any way affect this particular branch of the rubber industry.

"As a matter of fact, most of the contracts had been placed with specifications for delivery not later than December 31, and while the contracts were unusually large for this particular class of merchandise, it did not to any great extent interfere with the commercial business, on account of the preferential rating given the medical rubber goods industry."

PNEUMATIC TIRE DIVISION.

G. M. STADELMAN, CHAIRMAN.

"The ending of the war means the termination of the activities of the Pneumatic Tire Division of the War Service Committee at the same time the War Industries Board ceases to function.

"Were it not for the fact that the Pneumatic Tire Division expects to ally itself with the Rubber Association of America as a division of that association, all of the good work which has been done with respect to conservation and standardization would be lost. It is my belief, however, that this work will be carried on by this new body."

RAILWAY SUPPLIES DIVISION.

H. E. RAYMOND, CHAIRMAN.

"It is understood that the life of the War Service Committee of the Rubber Industry will terminate January 16, 1919, coincident with the annual meeting of The Rubber Association of America. Automatically its sub-committees will cease to be. The Rubber Association will continue to serve the Government where needed to wind up matters pending, inclusive of railroad needs.

"My division of activity will have accomplished several important acts of standardization, continuing for all time to come, which the war's ending will not destroy."

RECLAIMED-RUBBER DIVISION.

F. H. APPLETON, CHAIRMAN.

"In my opinion, now that the rubber manufacturers are no longer making war goods, and therefore, are enabled to resume their regular lines, it would seem that the demand for reclaimed rubber should return to normal."

SOLID TIRE DIVISION.

J. W. THOMAS, CHAIRMAN.

"It is to be hoped that our industry will recognize that, notwithstanding the termination of the war, there is still a great patriotic work to be done by many of the committees which have been appointed. Generally speaking, the standardization work of any industry tends to improve the general economic conditions of the country. The prevention of waste and the concentration of effort along certain well-defined lines is as much a patriotic duty in times of peace as in war.

"Our industry as a whole will be immensely benefited by the standardizations which have been formulated by the Solid Tire Division, and the truck owner will be equally benefited if the truck builder recognizes the value of this work and accepts the standardizations in the same spirit that prompted their creation. The work in the immediate future by the Solid Tire Division is to promote the general adoption in commercial lines of the standardizations which the division has created. The honest effort and whole-hearted enthusiasm which has been shown in the work of the Solid Tire Division is very gratifying, and is indicative of what our industry can really accomplish by the continuation of such committee work in time of peace."

THE RUBBER ASSOCIATION AND THE WAR SERVICE COMMITTEE.

"More remarkable has been the manner in which the rubber industry, through its representatives, has enforced the restrictions and managed the details of import and export licensing, curtailment, and allocation, affecting it under the direction of the War Trade Board. For untiring and impartial service, sound judgment and keen foresight, the officials of The Rubber Association of America and the members of the War Service Committee of the Rubber Industry, including its numerous divisions, deserve the grateful appreciation of the whole trade.

"Following the industrial mobilization of the country in December, 1917, and the organization of the War Service Committee to assist the Government, events of great moment to the rubber industry crowded one upon another in rapid sequence. To prevent crude rubber and rubber goods from reaching the enemy, all imports of crude rubber and allied gums, cotton and other materials were put under license. The Rubber Association was asked by the War Trade Board to act as consignee of all importations of crude rubber from foreign countries, to be released only under guarantees of good faith. For the same reasons, to prevent shortage and to conserve them for ourselves and our allies, rubber and allied gums, also numerous chemicals and compounding ingredients, were placed on the Export Embargo List. That the enemy might not profit from American business, the Enemy Trading List was issued, prohibiting trade with certain Latin-American firms. In February, these precautions were followed by placing all imports and exports under license.

"By May the demands upon the available ship tonnage had become so great that drastic restrictions in overseas commerce became necessary and the importation of crude rubber, along with other commodities, was curtailed. To prevent speculation, maximum prices for the various grades were fixed in advance. The basis of importation for a three months' period was set at 100,000 tons per annum; government needs, estimated at 35,000 tons, were deducted and the balance allocated pro rata to each firm on a basis of 7/16 of its 1917 consumption. This arrangement and subsequent modifications were worked out with the aid of data furnished by a series of questionnaires issued to the trade by the War Service Committee, in which, for the first time in history, rubber manufacturers told how much crude and reclaimed rubber they consumed."

ENTHUSIASTIC SERVICE.

"Hampered by coal and labor shortages, enforced holidays, transportation difficulties, adverse priorities, embargo, restriction, curtailment, and allocation of raw materials and finished products, high taxes and constantly advancing costs for wages and most commodities, rubber men have persisted in patriotic optimism and practical helpfulness rather than self-pity. Their zeal to further American participation in the war is imperishably written in the records of every campaign for Liberty Bonds, War Savings Stamps, United War Work and Red Cross funds; it is seen in the innumerable firm and community funds to provide wholesome entertainment, reading matter, athletic goods, comfort kits and smokes for the boys in service; it is mani-

festated by the enthusiasm for Americanization in rubber mills, that foreign-born employees may be educated in our language and ideals. Service flags in virtually every establishment bear eloquent testimony to the thousands of officials and employees in various branches of war service, many being in executive government positions of great responsibility."

PRACTICAL PATRIOTISM.

"This world conflict has placed rubber goods among the prime essentials of modern warfare, and the industry may take a just pride in the notably high average quality of the goods supplied and the marked absence of anything savoring of profiteering. Even the unfortunate raincoat scandal is being shown in the courts to be the fault of irresponsible workers and careless inspectors rather than that of the rubber industry. The dispatch with which enormous quantities of waterproof garments, gas-masks, and other rubber goods were supplied to the Army and Navy was truly wonderful, while the eagerness with which the entire heavy-footwear producing capacity of the country was placed at the disposal of the Government until military needs for millions of pairs of rubber boots, overshoes and gaiters were met, regardless of more lucrative civilian orders, exemplifies the sort of practical patriotism that has animated the trade."

CYCLE AND MOTOR TRUCK TIRES.

"The past year has witnessed numerous economic changes brought about by the war, which affect the rubber industry greatly. Higher transportation costs have increased the use of the bicycle, with a consequent greater demand for tires. But of far more importance is the enormous development of motor trucks for army use, delivery purposes, short-haul and even long-distance overland freights in which a few rubber companies were among the pioneers. More than half a million motor trucks are now in use in the United States, and it is confidently predicted that in five years there will be four millions. A phenomenal growth of the solid-tire industry has resulted. Meanwhile, too, cord construction has removed the previous limits of pneumatic-tire sizes, and 12-inch cord tires are now being successfully used on the heaviest trucks, prolonging their life and increasing their speed. Nothing can stop this great economic movement except the failure to build hard-surfaced roads of adequate strength to carry the greater tonnage at the higher speed required, and with government officials everywhere awake to the need, an adequate construction program seems assured.

"New industries have been created and further incentive given to the old by the abnormal conditions affecting raw materials. The prevailing spirit of economy, the necessity to conserve rubber, the high cost and shortage of tires, and the importance of obtaining maximum service from them have all been factors in the new industry of retreading or rebuilding tires, which has assumed considerable importance in America during the last twelvemonth. Henceforth thousands of automobile tires, such as were formerly discarded prematurely, will be rehabilitated for further service at a lower cost per mile than that of new tires."

THE SPIRIT OF COOPERATION.

"Certainly the magnificent spirit of patriotism and cooperation in which the trade as a whole has faced the problems and hardships of the war, always making its decisions for the good of the entire industry, indicates with what confidence the period of readjustment and reconstruction may be looked forward to. In this connection legalized export combinations in America will go a long way to offset the scheme of a possible Prussian rubber trust to secure an inordinate share of foreign trade."

RUBBER PRODUCTION IN THE FAR EAST.

Messrs. Harrisons and Crossfield, Limited, London, England, calculate that the annual production of plantation rubber in the Far East will amount to 350,000 tons when the 2,000,000 acres of trees have all attained 400 pounds per acre.

Activities of the Rubber Association of America, Inc.

DECEMBER has been an eventful month for the rubber industry in the removal of manufactured rubber products from the export conservation list, the withdrawal of all restrictions governing the production of rubber products, and the removal of all restrictions relating to the imports of crude rubber. Imports will continue to be consigned to The Rubber Association and the usual guarantees required. Members of the Association were promptly informed of these and other events of interest to the trade by the following communications from The Rubber Association and the War Service Committee:

MANUFACTURED PRODUCTS FREE OF EXPORT.

December 2, 1918.

To all rubber manufacturers:

We quote herein a letter received from the Bureau of Imports of the War Trade Board, under date of November 27, 1918:

For your information we advise you that manufactured rubber products have been removed from the Export Conservation List, effective November 27, 1918. This means that after that date it will not be necessary for exporters to obtain their licenses for export shipments of manufactured rubber products from the Bureau of Exports in Washington, as heretofore. The branch offices of that Bureau will issue the licenses in the future.

TRAFFIC COMMITTEE'S VIEW OF TRANSPORTATION PROBLEM.

December 4, 1918.

To firm members of The Rubber Association of America:

The Traffic Committee wishes to bring to the attention of the members of this association what is believed by many to be the most important transportation problem ever presented to the American people, namely, the future operation of our transportation facilities through the medium of government ownership or the restoration of the properties to their owners with continued private control under reasonable governmental regulation.

The committee believes that the cessation of the war has brought about a very great change in the transportation needs of the country and that the best interests of the shipping public can be met only by private control and operation subject to reasonable regulation by our Government, such regulation to permit efficient competition. The committee realizes that undoubtedly many methods formerly in vogue in connection with the operation of our transportation system should not be used again and that any of the benefits to the public that have been made possible by unified control should be retained.

Please understand that the Traffic Committee has reached this conclusion only after careful thought and investigation and the committee's consideration was not subject to any influence other than the desire to protect the transportation interests of the industry.

At the annual meeting of the Traffic Club of New York, held on Tuesday, the 26th ultimo, those present were particularly fortunate to have the privilege of listening to a clear presentation of the transportation problems by Lewis J. Spence, Director of Traffic, Southern Pacific Co. Mr. Spence's views of the situation are so clear and fundamentally sound that this committee believes that every one interested in transportation matters should read his address.

We appreciate fully that with respect to a problem of this kind the members may have reached a conclusion based on their experience with transportation conditions, but we respectfully suggest that if the individual members can share the view of this committee, the able presentation of the matter by Mr. Spence should be placed in the hands of the congressmen and senators of your congressional districts and states, accompanied by an appeal for their support in reasonable and sane regulation of transportation facilities, to the end that they may be returned to their owners for operation with reasonable businesslike regulation by our Government.

PACIFIC COAST EXPORT BILLS OF LADING.

December 10, 1918.

To firm members of The Rubber Association of America:

Your attention is directed by the Traffic Committee to the following notice issued by Regional Directors A. H. Smith and C. H. Markham of the Eastern and Allegheny Regions, respectively,

relating to the issuance of export bills of lading via Pacific Coast ports:

To All Concerned:

For the purpose of issuing export bills of lading via Pacific Coast ports, the Trans-Pacific Export Bill of Lading Agency is hereby established as of December 15, 1918, located at 143 Liberty street, New York City, with C. H. Morehouse, Agent, in charge.

To minimize the work and facilitate the issuance of export bills of lading, the following rules are prescribed:

The exporter or shipper will be required to make all necessary copies of bills of lading, showing thereon the export license number and date of expiration; the railroad permit number, weight, measurement, rate, inland, ocean and State toll charges.

All bookings with steamship lines must be made by the shipper or exporter through their own agencies.

Railroad permits are required in all cases and may be obtained by the exporter or shipper through their Pacific Coast representative or by agent with whom the booking was made. Such permits are issued by the North Pacific Export Committee at Seattle, Washington, and the California Export Committee at San Francisco, California.

Advices of clearances at ports of exit, when required, must be obtained by exporters or shippers through the agency with whom booking was made.

The payment of all bills covering inland, ocean and State toll charges must be made within the provisions of Director General's Orders Nos. 25 and 25-A.

NOMINATING COMMITTEE'S REPORT.

December 12, 1918.

To the firm members of The Rubber Association of America:

Pursuant to article VI, section 2, paragraph (a) of the constitution and by-laws of The Rubber Association of America, Inc., the undersigned Committee on Nominations submit the following list of nominations for four directors to succeed those whose terms expire in January, 1919:

James Newton Gunn, United States Tire Co.; John S. Lowman, Philadelphia Rubber Works Co.; A. D. Thornton, Canadian Consolidated Rubber Co., Ltd.; Senecca G. Lewis, Pennsylvania Rubber Co.

These nominations are to be voted upon at the annual meeting to be held at the Waldorf-Astoria, New York, on January 16, 1919.

In accordance with the amendment to the constitution and by-laws adopted at the annual meeting of the Association in January, 1918, all directors of The Rubber Associations are now elected for terms of three years.

CALL FOR ANNUAL MEETING.

December 16, 1918.

To the firm members of The Rubber Association of America:

You are hereby notified that the annual meeting of The Rubber Association of America, Inc., will be held at the Waldorf-Astoria, New York, on Thursday, January 16, 1919, at 4 o'clock p. m., at which meeting four directors to serve three years, to succeed those whose terms expire at that time, will be elected, and the reports of the officers submitted.

The Board of Directors recommends that the constitution and by-laws of the Association be amended so that elections to membership in the Association may be by vote of the Board of Directors, as well as by the Executive Committee; also that Article XII of the constitution and by-laws entitled "Entertainments" be amended so that entertainments and dinners of the Association may be held at the discretion of the Board of Directors or the Executive Committee, instead of at the discretion of the Executive Committee alone, as it reads at present; also that Article XIV entitled "Expulsions or Suspensions" be amended so that the Board of Directors will have equal authority with the Executive Committee in such cases.

Every firm member of the Association is entitled to be represented at the annual meeting by the registered firm representative, but the firm representative's voting power may be delegated to some one in the employ of or acting for such member by giving a written proxy. Each firm member is entitled to one vote. Should your firm representative be unable to attend the annual meeting, he may execute the enclosed blank proxy and direct the person in whose favor he executes such proxy to present the same at the entrance to the meeting.

The annual meeting will be followed by the nineteenth annual banquet, which this year takes the form of a Victory Banquet, in the grand ball-room of the Waldorf-Astoria, at 7.30 o'clock in the evening.

FIRM AND ASSOCIATE MEMBERS ELECTED.

The Executive Committee elected the following firm and associate members at the meeting of December 19:

FIRM MEMBERS AND REPRESENTATIVES.

Arnold W. Francis, Arnold W. Francis, 66 New street, New York City.

The Rosendale-Reddaway Belting & Hose Co., Henry P. Wherry, 32 Euclid avenue, Newark, New Jersey.

Alfred Hale Rubber Co., David A. Cutler, Atlantic, Massachusetts.

ASSOCIATE MEMBER.

W. H. Parker, National Standard Co., Niles, Michigan.

VICTORY BANQUET.

The nineteenth annual banquet of The Rubber Association of America, Inc., will take the form of a Victory Banquet and will be held in the grand ballroom of the Waldorf-Astoria, 5th avenue and 34th street, New York, on Thursday evening, January 16, 1919, at seven-thirty o'clock. Tickets will be twelve dollars.

Arrangements have been made for seating guests at round tables accommodating parties of eight or ten persons. Members desiring entire tables, or those who wish to sit together but do not require an entire table, will kindly state their wishes when ordering tickets, using the form provided. Tickets are sold only to members or to those in their employ, but there is no limitation to the number which each member may purchase.

WAR SERVICE COMMITTEE OF THE RUBBER INDUSTRY.

RUBBER RESTRICTIONS REMOVED.

THE following telegram and detailed information was sent to the rubber trade on December 13, 1918, as a result of the meeting of the chairmen of the various war service committees held on the same date:

We are pleased to advise that all restrictions governing production of rubber products and the amount of crude rubber that may be imported from primary markets have been withdrawn effective to-day. Rubber will be consigned to the Rubber Association as heretofore and the usual guarantee will be required, but maximum prices on allocation features are entirely eliminated.

WAR SERVICE COMMITTEE OF THE RUBBER INDUSTRY.

DETAILS OF THE RULINGS.

To the rubber industry:

Confirming our telegram of this date, we quote below letter received from the War Industries Board:

United States War Industries Board,
Washington, D. C.

December 12, 1918.

War Service Committee of the Rubber Industry, U. S. A.:

Beg to advise that effective December 13, 1918 all restrictions governing the production of all rubber articles, including casings and tubes under six inches, are herewith withdrawn. This ruling annuls Issue No. 2, Regulations Governing the Production of Rubber Products and revised schedules on casings and tubes authorized November 16, 1918, by the rubber section for the October-December period. Kindly wire all manufacturers accordingly.

H. T. DUNN, Chief.

Rubber Section, War Industries Board.

From the above you will note that all restrictions as to production of manufactured rubber goods have been removed, effective immediately.

We also received the following instructions from the War Trade Board contained in letter and telegram of this date:

By a regulation passed this day by the War Trade Board the restriction as to quantity of crude rubber which may be licensed for shipment from overseas has been revoked, effective immediately. On and after this date, licenses to import crude rubber from overseas will be issued without limit as to quantity, provided applicant conforms with all existing regulations of the War Trade Board. The War Trade Board also withdraws the maximum prices and the allocation features. Rubber will continue to be consigned to The Rubber Association

as heretofore and the Association will continue to require the usual guarantees.

Your attention is directed to the fact that the relaxation of this restriction only affects shipments from overseas. We are informed it will not be the general policy of the War Trade Board to issue licenses for the importation of rubber from countries other than those of origin until after February 13, 1919, and that this same policy will apply to shipments now in the United States which have arrived in violation of the regulations.

WAR SERVICE COMMITTEE.

RUBBER GOODS IMPORTS PERMITTED.

DECEMBER 20, 1918.

To manufacturers and importers of rubber manufactured goods:

We quote below letter received from the War Trade Board notifying us of the revocation of the regulation prohibiting the importation of manufactured rubber goods:

For your information we would advise you that the War Trade Board ruling prohibiting the importation of rubber manufactured goods has been revoked by War Trade Board ruling No. 427 and the Bureau of Imports has been instructed to issue licenses permitting the importation of rubber manufactured goods provided applications conform to other regulations of the War Trade Board.

STANDARDIZATION AND CONSERVATION SHOULD CONTINUE.

While all conservation rulings have been revoked, the War Industries Board expresses the hope in the following letter from the Conservation Division, that the rubber industry will continue to eliminate needless waste:

Owing to the changed conditions in the rubber industry the Conservation Division has decided, with the concurrence of the Rubber Section, that the various conservation schedules that have been issued to rubber manufacturers will be rescinded. Will you please notify the members of the industry of this decision?

The information that we have received in the course of our inquiries regarding these schedules indicates clearly that substantial savings of labor, material, equipment and capital are resulting. We heartily appreciate the ready spirit of cooperation that has been shown by the rubber industry and we hope that the industry of its own accord will find it possible to continue to observe those provisions of the schedules which eliminate needless waste and can be carried out without real hardship.

NEW DIVISIONS TO BE ORGANIZED.

In view of the above communication the War Service Committee has suggested that the chairmen of those divisions not already divisions of The Rubber Association extend an invitation to the manufacturers to attend a luncheon-meeting at the Waldorf-Astoria January 16 and organize similar divisions of the Rubber Association.

REDUCTION IN ZINC OXIDE PRICES.

The New Jersey Zinc Co., New York City, announced December 14, 1918, a reduction in prices on its brands of zinc oxide and lithopone used by the rubber trade. The new price list, which became effective immediately, and which applies on contracts for the first quarter of 1919, follows:

AMERICAN PROCESS		Carloads.	Less Carloads.
Special	.....	10 1/2	10 1/4
XX	.....	10	10 1/4
FRENCH PROCESS "FLORENE BRANDS."		Carloads.	Less Carloads.
White No. 1	.....	13	13 1/4
Green No. 1	.....	12 1/2	12 3/4
Red Seal	.....	12	12 3/4
Lithopone	.....	7 1/4	8

Above prices apply only when packed in barrels. When packed in bags the price is one-eighth of a cent per pound less.

ABOLITION OF EXPORT DUTY ON RUBBER AT IQUITOS.

The duty of \$0.44 per 100 pounds on rubber exported from Iquitos, Peru, has been repealed. Rubber exports from other Peruvian points is still subject to the regular export duty of 8 per cent. ad valorem, except rubber from Putumayo, which pays only half that amount.

Government Specifications for Tires, Tubes, Repair Materials and Accessories.

THE Motor Transport Corps of the United States Army, the War Service Committee of the Rubber Industry, and the Special Board of Officers, convened under paragraph 30, S. O. 91, W. D., 1918, have prepared and approved the following specifications for pneumatic tires, including automobile, motorcycle and bicycle tires; solid motor tires, repair material and accessories. These specifications were revised to November 1, and supersede those published in THE INDIA RUBBER WORLD October 1, 1918.

CLINCHER BICYCLE TIRES.

SIZES 28 BY 1½ INCHES AND 28 BY 1½ INCHES.

FABRIC CONSTRUCTION.

Specification No. 1221A.

NOVEMBER 1, 1918.

1. GENERAL. (a) Bicycle pneumatic casings manufactured in accordance with this specification shall be of fabric or cord construction of the sizes known as 28 by 1½ inches and 28 by 1½ inches.

(b) The manufacturer of casings must guarantee them to be free from defects in workmanship and material.

(c) The casings shall be plainly marked with the manufacturer's name and size of tire.

2. TYPE. All casings furnished under this specification shall be of the manufacturer's standard non-skid clincher type, designed to satisfactorily fit the standard 28 by 1½ inch single clinch all steel bicycle rim.

3. CONSTRUCTION. (a) Carcass of the casings must consist of two plies of fabric furnished both sides.

(b) All fabric shall be square-woven (26 by 26) having a tensile strength for both warp and filler of not less than 110 pounds per inch or its physical equivalent of cords as approved by the Government. Methods of testing to be the same as provided in the specifications for pneumatic automobile casings.

(c) All fabric must be thoroughly dried in accordance with standard manufacturing practice before it is started through the process of rubberizing.

(d) The tread of the casing shall not be less than 0.120 inch thick. (e) The sidewall of the casing shall not be less than 0.032 inch thick when measured on the cured casing.

4. PHYSICAL MEASUREMENTS AND TESTS. (a) The cross-sectional diameter of each tire inflated to 40 pounds shall be not less than 1.29/64 inches in 28 by 1½ inches and 1.37/64 inches in 28 by 1½ inches.

(b) Strength of the union between plies of fabric shall average ten pounds or more for each inch of standard dead weight friction test as provided in the specifications for pneumatic automobile casings.

(c) The strength of the union between tread and plies or between sidewall and plies shall average ten pounds or more using the standard dead weight friction test as above provided.

5. FLAPS. Each casing shall have a flap in accordance with the standard commercial practice.

6. COMPOUNDS. (a) Tread.—The tread shall be made from and have the characteristics of a compound containing at least 55 per cent by volume of the best quality new wild or plantation rubber. The minimum tensile strength shall be 1,600 pounds per square inch with a minimum elongation of 400 per cent (2 to 10 inches) as determined by the average of four test pieces when stretched at the rate of twenty inches per minute. The test pieces shall be cut longitudinally and shall be ½-inch wide of a gage length of two inches; the ends being gradually enlarged to a width of approximately one inch. The permanent set determined by the average of four tests with test pieces as above, shall not exceed 25 per cent after an elongation of 400 per cent (2 to 10 inches) for ten minutes. All tests shall be made at a temperature between 65 degrees and 90 degrees F.

(b) Friction.—The friction shall be made from a compound having characteristics of a compound containing at least 55 per cent by volume of the best quality new wild or plantation rubber.

(c) Sidewalls.—The sidewalls shall be made from and have the characteristics of a compound containing at least 55 per cent by volume of the best quality new wild or plantation rubber. The minimum tensile strength of the sidewall rubber shall be 1,200 pounds per square inch with a minimum elongation of 400 per cent (2 to 10 inches). The permanent set shall not exceed a maximum of 25 per cent as determined by the average of four tests as described in 6(a).

Compounds shall be free from ingredients known to the rubber trade as old substitutes.

(d) The manufacturer must state the amount and kind of reclaimed rubber used in the compounds.

(e) All above test pieces must be cut from casings.

7. INSPECTION. The Government reserves the right to make any inspection, test or analysis necessary to assure the product meeting all requirements of this specification.

8. TUBES. The inner tube shall meet the specifications of the automobile and motorcycle tubes, with the following exceptions: (a) minimum ply size shall be 1 inch; (b) minimum gage shall be 0.048-inch; (c) the valve shall be Schrader's 1022, or its approved equivalent.

9. PACKING. Packing shall be as per specifications accompanying the request for bid.

PNEUMATIC MOTORCYCLE CASINGS (NON-SKID).

SIZE 28 BY 3 INCHES.

FABRIC CONSTRUCTION.

Specification No. 1064A.

NOVEMBER 1, 1918.

1. GENERAL. (a) Pneumatic motorcycle casings manufactured in accordance with this specification shall be of fabric construction of the size known to the trade as 28 by 3 inches.

(b) Casings must be designed to carry a load of 3½ pounds, when inflated to 40 pounds per square inch.

(c) The manufacturers of casings must guarantee them to be free from defects in material and workmanship.

(d) Casings shall be plainly marked with manufacturer's name, serial number and size of tire. (e) It is soon as possible it is desired that all casings be marked with the equivalent metric sizes as recommended by the Society of Automotive Engineers.

2. TYPE. All casings manufactured in accordance with this specification shall be of the manufacturer's standard non-skid clincher type, designed for the S. A. E. clincher motorcycle CC rim of the size 28 by 3 inches.

3. CONSTRUCTION. (a) Splices on the first ply of fabric shall be gum-stripped.

(b) Carcass of casing shall consist of four separate plies of tire fabric, with friction cords on the sides and skid coat on one side. The carcass of one ply frictioned on two sides and skid coated on one shall be at least 0.048-inch. Each ply shall have not more than two splices which must be at least seven inches apart measured on the circumference of the casing. The splices in the casing shall be at least three inches apart when measured on the circumference of the casing.

(c) All fabric must be thoroughly dried according to standard manufacturing practice before it is started through the operations of rubberizing.

(d) The usual methods of inspection used by tire companies in commercial practice to discover defects in each roll of fabric shall be employed.

All fabric shall be tested in an approved testing machine to determine the tensile strength in the following manner: the distance between the grips on the machine shall be approximately three inches, and the separation of the jaws shall be at the rate of 20 inches per minute. Six samples shall be cut from each roll in such a manner as to eliminate any unnecessary waste of material. Three samples shall be cut longitudinally to determine the warp strength and three samples shall be cut transversely to determine the filler strength. The samples shall be prepared in the following manner: one to 23 yards (1 inch width) fabric shall be dried one hour and thirty minutes at 110 degrees C. Breaking test shall be completed within thirty seconds of time of removing test strip from oven. The results must show a tensile strength of not less than 165 pounds per inch width for either warp or filler.

(e) Beads shall be constructed with a core filler as in standard commercial practice.

(f) There shall be a cushion of rubber compound applied over the fabric which shall be wider than the breaker. The minimum cure of this cushion shall be 100 degrees F.

(g) Over the cushion there shall be at least one breaker strip of open-weave fabric such as is used in standard commercial practice, coated on both sides with a compound of the same nature as the cushion and tread of a nature to form a perfect union between the cushion and tread when the cure is effected. This breaker strip shall have a minimum width of 1½ inches. The breaker shall be made from long-staple cotton weighing not less than 8 ounces per square yard.

(h) The tread of the casing shall not be less than ¼-inch thick in the center, ⅜-inch thick shall be the minimum thickness for that part of the tread under the middle of the non-skid portion.

(i) The sidewall of the casing shall have a minimum thickness of 0.045-inch.

4. PHYSICAL MEASUREMENTS AND TESTS. (a) Cross-sectional diameter of each tire inflated according to the recommended weight and load schedule of the S. A. E. shall not be less than 2.15/16 inches nor more than 3.3/10 inches.

(b) Tires shall be capable of withstanding water pressure of 50 pounds per square inch without apparent injury. This test to be made at the discretion of the Government.

(c) The strength of the union between plies of fabric shall average ten pounds or more per inch using the standard friction test, viz., a section of the casing to be cut off one inch of width measured circumferentially. The plies are to be started and pulled down two inches at one head, which head is to be clamped in the jaws of standard friction testing machine.

(d) The strength of the union between cushion and tread shall be not less than 10 pounds per inch using the standard dead weight friction test. The rate of separation shall not be more than one inch per minute.

(e) The strength of the union between the breaker and tread and between the breaker and cushion shall be not less than 28 pounds per inch using the standard dead weight friction test as above provided.

(f) Strength of the union between sidewall and casing shall be not less than 10 pounds per inch using the standard dead weight friction test as above provided.

5. ROAD TEST. Manufacturers holding an government requirements must meet the following conditions:

(a) Casings will not be given consideration unless the maker submitting the bid furnishes an affidavit stating that he is not a party to any contract to maintain at least one machine available used exclusively for test work, and that such same machine averages at least 1,000 machine miles per machine per week.

(b) The speeds, loads, tire sizes, inflation and road conditions must be such that the casings are properly tested. The Government may appoint an inspector to see that the above conditions are complied with.

(c) A holder of a contract for delivery of any casings to the Government, stating that the casings to be delivered are the ones covered by the contract, shall be held to the same standard as a holder of a contract, and a sufficient number of casings satisfactory to the government, not less than six, have averaged on the test wheels at least 1,000 machine miles.

(d) The inside of each casing shall be properly lined in accordance with the standard practice of the tire manufacturers.

7. FLAPS. Each casing shall have a flap cemented inside of the casing in accordance with standard commercial practice.

8. **COMPOUNDS.** (a) **Tread.**—The tread shall be made from and have the characteristics of a compound containing at least 65 per cent by volume of the best quality new wild or plantation rubber. Compound shall be free from ingredients known to the rubber trade as oil substitutes and/or reclaimed rubber. The tensile strength shall be 2,200 pounds per square inch with a minimum elongation of 450 per cent (2 to 11 inches), as determined by the average of four test pieces stretched at the rate of 30 inches per minute. The test pieces shall be cut longitudinally and shall be $\frac{1}{4}$ -inch wide over a gage length of two inches, the ends being gradually enlarged to a width of approximately one inch. The permanent set determined by the average of four tests with the test pieces as above shall not exceed 25 per cent after an elongation of 400 per cent (2 to 10 inches) for ten minutes followed by a rest of ten minutes. All tests shall be made at a temperature between 65 and 90 degrees F.

(b) **Friction and Cushion.**—These shall be made from and have the characteristics of a compound containing at least 75 per cent by volume of the best quality new wild or plantation rubber. The compound shall be free of ingredients known to the rubber trade as oil substitutes and/or reclaimed rubber.

(c) **Sidewall.**—The sidewall shall be made from and have the characteristics of a compound containing a minimum of 65 per cent by volume of the best quality new wild or plantation rubber. Reclaimed rubber to the extent of 15 per cent by weight of total compound is allowed, but the amount and kind must be declared by the manufacturer. Compound shall have a minimum tensile strength of 1,500 pounds per square inch and a minimum elongation of 450 per cent (2 to 11 inches) and a maximum set ingredients known to the rubber trade as oil substitutes.

(d) **All test pieces must be cut from casings.** The Government reserves the right to make any inspection, test or analysis necessary to insure the product meeting all requirements of this specification.

(e) **WRAPPING AND MARKING.** All casings shall be spirally wrapped according to standard practice and properly labeled on the outside showing the size and type, and name of manufacturer. A label with the month and year of manufacture stamped on it shall be pasted in a conspicuous place.

11. **PACKING.** Packing shall be as per specifications accompanying the request for bid.

PNEUMATIC MOTORCYCLE CASINGS (NON-SKID).

SIZE 29 BY $\frac{3}{4}$ INCHES.

FABRIC CONSTRUCTION.

Specification No. 1065A.

NOVEMBER 1, 1918.

1. **GENERAL.** (a) Pneumatic motorcycle casings manufactured in accordance with this specification shall be of fabric construction of the size known to the trade as 29 by $\frac{3}{4}$ inches.

(b) Casings must be designed to carry a load of 400 pounds when inflated to 45 pounds per square inch.

(c) The manufacturers of casings must guarantee them to be free from defects in material and workmanship.

(d) Casings shall be plainly marked with manufacturer's name, serial number and size of tire.

(e) As soon as possible it is desired that all casings be marked with the equivalent metric sizes as recommended by the Society of Automotive Engineers.

2. **TYPE.** All casings manufactured in accordance with this specification shall be of the manufacturer's standard non-skid clincher type, designed for the S. A. E. clincher motorcycle CC rim of the size 28 by $\frac{3}{4}$ inches.

3. **CONSTRUCTION.** (a) Splices on the first ply of fabric shall be gum-stripped.

(b) Carcass of casing shall consist of four separate plies of tire fabric, with friction coat on two sides and skid coat on one side. The gage of one ply frictioned on two sides and skid-coated on one shall be at least 0.045-inch. Each ply shall have not more than two plies which must be at least seven inches apart measured on the circumference of the casing. The splices in the casing shall be at least three inches apart when measured on the circumference of the casing.

(c) All fabric must be square-woven (23 by 23) from Egyptian long-staple cotton or its physical equivalent as approved by the Government, weighing 17½ ounces to the square yard or an allowable variance of plus or minus 3 per cent.

(d) All fabric must be thoroughly dried according to standard manufacturing practice before it is started through the operations of rubberizing.

(e) The usual methods of inspection used by tire companies in commercial practice to discover defects in each roll of fabric shall be used. The fabric shall be tested in an approved testing machine to determine the tensile strength in the following manner: the distance between the grips on the machine shall be approximately three inches, and the separation of the jaws shall be at the rate of one inch per minute. Six samples shall be cut from each roll in such a manner as to eliminate any unnecessary waste of material. Three samples shall be cut longitudinally to determine the tensile strength, and three samples shall be cut transversely to determine the filler strength. The samples shall be prepared in the following manner: unravel to 23 yards (1-inch width); fabric shall be dried one hour and thirty minutes at 120 degrees F. Breaking test shall be completed within thirty seconds of time of removing test strip from oven. The results must show a tensile strength of not less than 165 pounds per inch width for either warp or filler.

(f) Beads shall be constructed with a core filler as in standard commercial practice.

(g) One chafing strip of square-woven fabric weighing not less than 8 ounces per square yard shall be used on each side of the casing. The chafing strip shall extend upward on the side of the casing at least $\frac{3}{4}$ -inch from the channel of the bead.

(h) There shall be a cushion of rubber compound applied over the fabric which shall be wider than the breaker. The minimum gage of this cushion shall be 0.045-inch.

(i) Over the cushion there shall be at least one breaker strip of open-weave fabric as is used in standard commercial practice, coated on both sides with a rubber compound having the physical characteristics of a natural rubber to form a perfect union between the cushion and tread when the cure is effected. This breaker strip shall have a minimum width of 2½ inches. Breaker shall be made from long-staple cotton weighing not less than 8 ounces per square yard.

(j) The tread of the casing shall not be less than $\frac{5}{16}$ -inch thick in the center, $\frac{1}{4}$ -inch of which shall be the minimum thickness for that part of the tread under the middle of the non-skid portion.

4. **THE sidewall of the casing shall have a minimum thickness of 0.050-inch.**

5. **PHYSICAL MEASUREMENTS AND TESTS.** (a) Cross-sectional diameter of each tire inflated according to the recommended weight and load schedule of the S. A. E. shall not be less than 3.716 inches.

(b) Tire shall be capable of withstanding water pressure of 275 pounds per square inch without apparent injury. This test is to be made at the discretion of the inspector.

(c) Tread shall be stretched to the union between plies of fabric shall average 16 pounds or more per inch, using the standard friction test, viz.: a section of the casing is to be cut one inch in width measured circumferentially. The plies are to be started and pulled apart at one end, where the head is to be clamped in the jaws of standard friction testing machine. The test shall be made on any ply of fabric in accordance with the standard dead weight friction test. The rate of separation shall not be more than one inch per minute.

(d) Strength of the union between the breaker and tread and between the breaker and cushion shall be at least 28 pounds per inch, using the standard dead weight friction test as above provided.

(e) Strength of the union between cushion and carcass shall be not less than 16 pounds per inch, using the standard dead weight friction test as above provided.

(f) Strength of union between sidewall and carcass shall be not less than 10 pounds per inch, using the standard dead weight friction test as above provided.

5. **ROAD TEST.** Manufacturers bidding on government requirements must meet the following conditions:

(a) Casings will not be given consideration unless the maker submitting the bid furnishes an affidavit stating that he has maintained and will continue to maintain at least one motorcycle used for road testing.

(b) The speeds, loads, tire sizes, inflations and road conditions must be furnished by the maker of the casings. The Government may appoint an inspector to see that the above conditions are complied with.

(c) A bidder must supply an affidavit before delivering any casings to the Government, stating that the casings to be delivered are the same cross-section and practically duplicate, in construction and material, casings which he has previously tested in accordance with paragraphs (a) and (b), and a sufficient number of casings satisfactory to the Government, not less than six, have averaged on the rear wheels at least 4,000 miles.

6. **LITING.** The inside of each casing shall be properly lined in accordance with the standard practice of the tire manufacturers.

7. **PLACING.** Each casing shall have a flap cemented into inside of the casing in accordance with standard commercial practice.

8. **COMPOUNDS.** (a) **Tread.**—The tread shall be made from and have the characteristics of a compound containing at least 65 per cent by volume of the best quality new wild or plantation rubber. Compound shall be free from ingredients known to the rubber trade as oil substitutes and/or reclaimed rubber. The tensile strength shall be 2,200 pounds per square inch with a minimum elongation of 450 per cent (2 to 11 inches), as determined by the average of four test pieces when stretched at the rate of 30 inches per minute. The test pieces shall be cut longitudinally and shall be $\frac{1}{4}$ -inch wide over a gage length of two inches, the ends being gradually enlarged to a width of approximately one inch. The permanent set determined by the average of four tests with the test pieces as above shall not exceed 25 per cent after an elongation of 400 per cent (2 to 10 inches) for ten minutes, followed by a rest of ten minutes. All tests shall be made at a temperature between 65 and 90 degrees F.

(b) **Friction and Cushion.**—These shall be made from and have the characteristics of a compound containing at least 75 per cent by volume of the best quality new wild or plantation rubber. The compound shall be free of ingredients known to the rubber trade as oil substitutes and/or reclaimed rubber.

(c) **Sidewall.**—The sidewall shall be made from and have the characteristics of a compound containing a minimum of 65 per cent by volume of the best quality new wild or plantation rubber. Reclaimed rubber to the extent of 15 per cent by weight of total compound is allowed, but the amount and kind must be declared by the manufacturer. Compound shall have a minimum tensile strength of 1,500 pounds per square inch and a minimum elongation of 450 per cent (2 to 11 inches) and a maximum set ingredients known to the rubber trade as oil substitutes.

(d) **All test pieces must be cut from casings.** The Government reserves the right to make any inspection, test or analysis necessary to insure the product meeting all requirements of this specification.

(e) **WRAPPING AND MARKING.** All casings shall be spirally wrapped according to standard practice and properly labeled on the outside, showing the size and type, and name of manufacturer. A label with the month and year of manufacture stamped on it shall be pasted in a conspicuous place.

12. **PACKING.** Packing shall be as per specifications accompanying the request for bid.

PNEUMATIC AUTOMOBILE CASINGS (NON-SKID).

SIZE 30 BY $\frac{3}{4}$ INCHES.

FABRIC CONSTRUCTION.

Specification No. 1066A.

NOVEMBER 1, 1918.

1. **GENERAL.** (a) Pneumatic automobile casings manufactured in accordance with this specification shall be of fabric construction of the size known to the trade as 30 by $\frac{3}{4}$ inches.

(b) Casings must be designed to carry a load of 570 pounds when inflated to 35 pounds per square inch.

(c) The manufacturers of casings must guarantee them to be free from defects in material and workmanship.

(d) Casings shall be plainly marked with manufacturer's name, serial number and size of tire.

(e) As soon as possible it is desired that all casings be marked with the equivalent metric sizes as recommended by the Society of Automotive Engineers.

2. **TYPE.** All casings manufactured in accordance with this specification shall be of the manufacturer's standard non-skid clincher type, designed for the S. A. E. clincher rim of the size 30 by $\frac{3}{4}$ inches.

3. **CONSTRUCTION.** (a) Splices on the first ply of fabric shall be gum-stripped.

(b) Carcass of casing shall consist of not less than four nor more than five separate plies of tire fabric, with friction coat on two sides and skid coat on one side. The gage of one ply frictioned on two sides and skid-coated on one shall be at least 0.045-inch. Each ply shall have not more than two plies, which must be at least seven inches apart measured on

the circumference of the casing. The splices in the casing shall be at least three inches apart when measured on the circumference of the casing.

(c) All fabric must be square-woven (23 by 23) from Egyptian long-staple cotton or its physical equivalent as approved by the Government, weighing 17½ ounces to the square yard with an allowable variance of plus or minus 3 per cent.

(d) All fabric must be thoroughly dried according to standard manufacturing practice before it is started upon the operations of rubberizing. The usual methods of inspection used by tire companies in commercial practice to discover defects in each roll of fabric shall be employed. All fabric shall be tested in an approved testing machine. Six samples shall be taken from each roll in the following manner: The distance between the grips on the machine shall be approximately three inches, and the separation of the jaws shall be at the rate of 20 inches per minute. The samples shall be cut from each roll in such a manner as to eliminate any unnecessary waste of material. Three samples shall be cut longitudinally to determine the warp strength and three samples shall be cut transversely to determine the filler strength. The samples shall be prepared in the following manner: unravel to 23 yards (1-inch width); fabric shall be dried one hour and thirty minutes at 110 degrees C. Breaking test shall be determined within thirty seconds of time of removing test strip from oven. The results must show a tensile strength of not less than 165 pounds per inch width for either warp or filler.

(e) Beads shall be constructed with a core filler as in standard commercial practice.

(f) One chafing strip of square-woven fabric weighing not less than 8 ounces per square yard shall be used on each side of the casing. The chafing strip shall extend upward on the side of the casing at least ¼-inch from the channel of the bead.

(g) There shall be a cushion of rubber compound applied over the fabric which shall be wider than the breaker. The minimum gage of this cushion shall be 0.045-inch.

(h) Over the cushion there shall be at least one breaker strip of open-weave fabric such as is used in standard commercial practice, coated on both sides with a rubber compound having the physical and chemical properties of a nature to form a perfect union between the cushion and the breaker when the cure is effected. This breaker strip shall have a minimum width of 2½ inches. Breaker shall be made from long-staple cotton weighing not less than 8 ounces per square yard.

(i) The tread of the casing shall be not less than 5/16-inch thick in the center, ¼-inch of which shall be the minimum thickness for that part of the tread under the middle of the non-skid portion.

(j) The sidewall of the casing shall have a minimum thickness of 0.030-inch.

4. PHYSICAL MEASUREMENTS AND TESTS. (a) Cross-sectional diameter of each tire inflated according to the recommended weight and load schedule of the S. A. E. shall not be less than 37/16 inches.

(b) Tires shall be capable of withstanding water pressure of 300 pounds per square inch without apparent injury. This test is to be made at the discretion of the inspector.

(c) The strength of the union between plies of fabric shall average 16 pounds or more per inch using the standard friction test, viz: a section of 10 inches wide by 1 inch high, measured circumferentially. The plies are to be started and pulled down two inches at one bead, while the other end is held in the standard friction testing machine. The head is to be clamped in the standard friction testing machine. The test shall be made on any ply of fabric in accordance with the standard dead weight friction test. The rate of separation shall be not more than one inch per minute.

(d) Strength of the union between the breaker and tread and between the breaker and cushion shall be not less than 28 pounds per inch, using the standard dead weight friction test. The union between the cushion and carcass shall be not less than 16 pounds per inch, using the standard dead weight friction test as above provided.

(e) Strength of union between sidewall and carcass shall be not less than 10 pounds per inch, using the standard dead weight friction test as above provided.

5. ROAD TEST. Manufacturers bidding on government requirements must meet the following conditions:

(a) Casings will not be given consideration unless the maker submitting the bid furnishes an affidavit stating that he has maintained and will continue to maintain at least two cars used exclusively for test work, and that these cars average at least 1,000 car miles per car per week.

(b) The speeds, loads, tire sizes, inflation, and road conditions must be such that the casings are properly tested. The Government may appoint an inspector to see that the above conditions are complied with.

(c) A bidder must supply a statement of the standard test casings to the Government, stating that the casings to be delivered are the same cross-section and practically duplicate, in construction and material, casings which he has previously tested in accordance with the standard test. The sufficient number of casings to be submitted to the Government, not less than 6, have averaged on the rear wheels at least 4,000 miles.

6. LINING. The inside of each casing shall be lined in accordance with the standard practice of the manufacturers.

7. FLAPS. No flaps shall be supplied.

8. COMPOUNDS. (a) Tread. The tread shall be made from and have the characteristics of a compound containing at least 65 per cent by volume of the best quality new wild or plantation rubber. Compound shall be free from ingredients known to the rubber trade as adulterants or of low quality.

(b) Breaker and Cushion. These shall be made from and have the characteristics of a compound containing at least 75 per cent by volume of the best quality new wild or plantation rubber. Compound shall be free from ingredients known to the rubber trade as adulterants or of low quality.

(c) Sidewall. The sidewall shall be made from and have the characteristics of a compound containing a minimum of 65 per cent by volume of the best quality new wild or plantation rubber. Compound shall be free from ingredients known to the rubber trade as adulterants or of low quality.

(d) Beads. The beads shall be made from and have the characteristics of a compound containing at least 75 per cent by volume of the best quality new wild or plantation rubber. Compound shall be free from ingredients known to the rubber trade as adulterants or of low quality.

(e) All test pieces must be cut from casings.

9. INSPECTION. The Government reserves the right to make any inspection, test or analysis necessary to insure the product meeting all requirements of this specification.

10. WRAPPING AND MARKING. All casings shall be spirally wrapped according to standard practice and properly labeled on the outside, showing the size and type, and name of manufacturer. A label with the month and year of manufacture stamped on it shall be pasted in a conspicuous place.

11. PACKING. Packing shall be as per specifications accompanying the request for bid.

PNEUMATIC AUTOMOBILE CASINGS (NON-SKID).

SIZE 31 BY 4 INCHES.

FABRIC CONSTRUCTION.

Specification No. 1063A.

NOVEMBER 1, 1918.

1. GENERAL. (a) Pneumatic automobile casings manufactured in accordance with this specification shall be of fabric construction of the size known to the trade as 31 by 4 inches.

(b) Casings must be designed to carry a load of 815 pounds when inflated to 65 pounds per square inch.

(c) The manufacturers of casings must guarantee them to be free from defects in material and workmanship.

(d) Casings shall be plainly marked with manufacturer's name, serial number and size of tire.

(e) As soon as possible it is desired that all casings be marked with the equivalent metric sizes as recommended by the Society of Automotive Engineers.

2. TYPE. All casings manufactured in accordance with this specification shall be of the manufacturer's standard non-skid type, designed for use on the standard rim of the size known to the trade as 3½ inches.

3. CONSTRUCTION. (a) Splices on the first ply of fabric shall be gum-stripped.

(b) Carcase of casing shall consist of not less than five nor more than six separate plies of tire fabric, with friction coat on two sides and skim coat on one side. The gage of one ply frictioned on two sides to determine the tensile strength shall be at least 0.045-inch. Each ply shall have not more than two splices which must be at least seven inches apart measured on the circumference of the casing. The splices in the casing shall be at least three inches apart when measured on the circumference of the casing.

(c) All fabric must be square-woven (23 by 23) from Egyptian long-staple cotton or its physical equivalent as approved by the Government, weighing 17½ ounces to the square yard with an allowable variance of plus or minus 3 per cent.

(d) All fabric must be thoroughly dried according to standard manufacturing practice before it is started upon the operations of rubberizing.

(e) The usual methods of inspection used by tire companies in commercial practice to discover defects in each roll of fabric shall be employed.

(f) All fabric shall be tested in an approved testing machine to determine the tensile strength in the following manner: the distance between the grips on the machine shall be approximately three inches, and the separation of the jaws shall be at the rate of 20 inches per minute. The samples shall be cut from each roll in such a manner as to eliminate any unnecessary waste of material. Three samples shall be cut longitudinally to determine the warp strength and three samples shall be cut transversely to determine the filler strength. The samples shall be prepared in the following manner: unravel to 23 yards (1-inch width); fabric shall be dried one hour and thirty minutes at 110 degrees C. Breaking test shall be determined within thirty seconds of time of removing test strip from oven. The results must show a tensile strength of not less than 165-pounds per inch width for either warp or filler.

(g) Beads shall be constructed with a core filler as in standard commercial practice.

(h) One chafing strip of square-woven fabric weighing not less than 8 ounces per square yard shall be used on each side of the tire. The chafing strip shall extend upward on the side of the tire at least ¼-inch from the channel of the bead.

(i) There shall be a cushion of rubber compound applied over the fabric which shall be wider than the breaker. The minimum gage of this cushion shall be 0.030-inch.

(j) Over the cushion there shall be at least one breaker strip of open-weave fabric such as is used in standard commercial practice, coated on both sides with a rubber compound having the physical and chemical properties of a nature to form a perfect union between the cushion and tread when the cure is effected. This breaker strip shall have a minimum width of 2½ inches. Breaker shall be made from long-staple cotton weighing not less than 8 ounces per square yard.

(k) The tread of the casing shall be not less than ¼-inch thick in the center, 1/8-inch of which shall be the minimum thickness for that part of the tread under the middle of the non-skid portion.

(l) The sidewall of the casing shall have a minimum thickness of 0.030-inch.

4. PHYSICAL MEASUREMENTS AND TESTS. (a) Cross-sectional diameter of each tire inflated according to the recommended weight and load schedule of the S. A. E. shall not be less than 4 inches.

(b) Tires shall be capable of withstanding water pressure of 300 pounds per square inch without apparent injury. This test is to be made at the discretion of the inspector.

(c) The strength of the union between plies of fabric shall average to 16 pounds or more per inch using the standard friction test, viz: a section of the casing is to be cut one inch wide, measured circumferentially. The plies are to be started and pulled down two inches at one bead, while the other end is held in the standard friction testing machine. The test shall be made on any ply of fabric in accordance with the standard dead weight friction test. The rate of separation shall be not more than one inch per minute.

(d) Strength of the union between the breaker and tread and between the breaker and cushion shall be not less than 28 pounds per inch, using the standard dead weight friction test as above provided.

(e) Strength of the union between cushion and carcass shall be not less than 16 pounds per inch, using the standard dead weight friction test as above provided.

(f) Strength of union between sidewall and carcass shall be not less than 10 pounds per inch, using the standard dead weight friction test as above provided.

5. ROAD TEST. Manufacturers bidding on government requirements must meet the following conditions:

(a) Casings will not be given consideration unless the maker submitting the bid furnishes an affidavit stating that he has maintained and will continue to maintain at least two cars used exclusively for test work, and that these cars average at least 1,000 car miles per car per week.

(b) The speeds, loads, tire sizes, inflation, and road conditions must be such that the casings are properly tested. The Government may appoint an inspector to see that the above conditions are complied with.

(c) A bidder must supply a statement of the standard test casings to the Government, stating that the casings to be delivered are the same cross-section and practically duplicate, in construction and material, casings which he has previously tested in accordance with the standard test. The sufficient number of casings to be submitted to the Government, not less than 6, have averaged on the rear wheels at least 4,000 miles.

6. LINING. The inside of each casing shall be lined in accordance with the standard practice of the manufacturers.

7. FLAPS. No flaps shall be supplied.

8. COMPOUNDS. (a) Tread. The tread shall be made from and have the characteristics of a compound containing at least 65 per cent by volume of the best quality new wild or plantation rubber. Compound shall be free from ingredients known to the rubber trade as adulterants or of low quality.

(b) Breaker and Cushion. These shall be made from and have the characteristics of a compound containing at least 75 per cent by volume of the best quality new wild or plantation rubber. Compound shall be free from ingredients known to the rubber trade as adulterants or of low quality.

(c) Sidewall. The sidewall shall be made from and have the characteristics of a compound containing a minimum of 65 per cent by volume of the best quality new wild or plantation rubber. Compound shall be free from ingredients known to the rubber trade as adulterants or of low quality.

(d) Beads. The beads shall be made from and have the characteristics of a compound containing at least 75 per cent by volume of the best quality new wild or plantation rubber. Compound shall be free from ingredients known to the rubber trade as adulterants or of low quality.

be such that the casings are completely uniform. The Government may appoint an inspector to inspect the above casings as supplied with—

(c) A label, case, stamp, or affidavit before delivering any casings to the Government, stating that the casings to be delivered are the same construction and practically duplicate, in construction and material, casings which he has previously tested satisfactorily with paragraphs (a) and (b), and a sufficient number of casings satisfactory to the Government, to test them on the machine mounted on the rear wheels at least 4,000 miles.

(d) The name of each casing shall be properly listed in accordance with the classification of the tire manufacturers.

(e) Labels, stamps, and affidavits shall be delivered.

8. COMPOUNDS. (a) Tread—The tread shall be made from and have the characteristics of a compound containing at least 75 per cent by volume of the best quality new wild or plantation rubber. Compound shall be free from ingredients known to the rubber trade as oil substitutes.

(b) The minimum tensile strength shall be 2,000 pounds to the square inch with a minimum elongation of 450 per cent (2 to 11 inches) as determined by the average of four test pieces evenly stretched at the rate of 30 inches per minute. The test pieces shall be longitudinally and shall be $\frac{3}{4}$ -inch wide.

(c) The ends of the test pieces, the ends being gradually enlarged to a width of approximately one inch. The permanent set determined by the average of four test pieces at the test piece as above shall not exceed 25 per cent after elongation of 400 per cent (2 to 10 inches) for ten minutes, followed by a rest of ten minutes. All tests shall be made at a temperature between 65 and 90 degrees F.

(d) Friction and Cushion—These shall be made from and have the characteristics of a compound containing at least 75 per cent by volume of the best quality new wild or plantation rubber. The compound shall be free from ingredients known to the rubber trade as oil substitutes and/or reclaimed rubber.

(e) Sidewall—The sidewall shall be made from and have the characteristics of a compound containing at least 75 per cent by volume of the best quality new wild or plantation rubber. Reclaimed rubber to the extent of 15 per cent by weight of total compound is allowed, but the compound and kind used shall be declared on the certificate. Compound shall have a minimum tensile strength of 1,500 pounds per square inch and a minimum elongation of 350 per cent (2 to 11 inches) and a maximum set of 25 per cent after elongation of 400 per cent (2 to 10 inches) for ten minutes, followed by a rest of ten minutes. All tests shall be made at a temperature between 65 and 90 degrees F.

(f) All test pieces must be cut from casings.

(g) Inspection—The Government reserves the right to make any inspection, test or analysis necessary to insure the product meeting all requirements of this specification.

(h) WRAPPING AND MARKING—All casings shall be spirally wrapped according to standard practice and properly labeled on the outside, showing the size and type, and name of manufacturer. A label with the month and year of manufacture stamped on it shall be pasted in a conspicuous place.

(i) PACKING—Packing shall be as per specifications accompanying the request for bid.

PNEUMATIC AUTOMOBILE CASINGS (RIBBED OR NON-SKID).

SIZE 33 BY 4 INCHES.

CORD CONSTRUCTION.

Specification No. 1069A.

NOVEMBER 1, 1918.

1. GENERAL. (a) Pneumatic automobile casings manufactured in accordance with this specification shall be of cord construction, of the size known to the trade as 33 by 4 inches.

(b) Casings must be delivered to carry a load of 815 pounds when inflated to 75 pounds per square inch.

(c) Manufacturer of casings must guarantee them to be free from defects in material and workmanship.

(d) Casings shall be plainly marked with manufacturer's name, serial number and size of tire.

(e) As well as possible, it is desired that all casings be marked with the equivalent metric sizes as recommended by the Society of Automotive Engineers.

(f) All casings manufactured in accordance with this specification shall be of the manufacturer's standard non-skid or ribbed (as ordered) straight side type designed for the standard S. A. E. straight side rim of the size 33 by 4 inches.

(g) CONSTRUCTION. (a) Carcass of casing shall consist of not less than two nor more than eight separate plies of cord applied in such a manner that an equal number of plies shall run in each diagonal direction across the casing.

(b) All cord material to be of the best quality combed Sen Island or Salakhar cotton or their physical equivalent as approved by the Government.

(c) All cord fabric must be thoroughly dried according to standard manufacturing practice before it is started through the operation of rubberizing.

(d) The usual methods of inspection used by tire companies in commercial practice to test a defective sample roll of cord fabric shall be employed, and tests to determine tensile strength of cords shall be made on ten individual cords taken from each roll. The results shown must be up to the standard set by the individual manufacturer.

(e) Two chafing strips of fabric weighing not less than eight ounces per square yard, shall be used on each side of the casing. Each chafing strip shall extend upward on the side and the casing be least one inch from the heel of the bead. One chafing strip shall extend at least $\frac{3}{16}$ inch above the other.

(f) There shall be a cushion of rubber compound applied over the cords which shall be wider than the breaker. The minimum gage of this cushion shall be 0.050-inch.

(g) Over the cushion there shall be at least one breaker strip of open-weave fabric such as used in standard commercial practice, coated on both sides with a rubber compound having the physical and chemical properties of a nature to form a perfect union between the cushion and tread when the cure is effected. The breaker strip shall have a minimum width of 2 1/4 inches. Breaker shall be made from long-staple Egyptian cotton or its physical equivalent as approved by the Government and shall weigh not less than ten ounces per square yard.

(h) The tread of the casing shall not be less than $\frac{3}{4}$ -inch thick in the center, $\frac{3}{8}$ -inch of which shall be the minimum thickness for that part of the tread under the heel of the non-skid part.

(i) The sidewall of the casing shall have a minimum thickness of 0.0625-inch.

2. PHYSICAL MEASUREMENTS AND TESTS. (a) Cross-sectional diameter of each tire inflated according to the recommended weight and load schedule of the S. A. E. shall not be less than 4.2 inches.

(b) The casing shall be capable of withstanding water pressure of 350 pounds per square inch without apparent injury. This test is to be made at the discretion of the Inspector.

(c) The minimum strength of the casing shall be 2,000 pounds. This "strength factor" is the product of the number of cords per inch measured at the tread at right angles to the cords and the number of cords per inch measured at the heel of the tire multiplied by the number of plies.

(d) The strength of the union between breaker and tread and between breaker and sidewall, during the test, for he has maintained and will continue to maintain at least 1,000 on miles per car per week.

(e) The strength of the union between breaker and sidewall shall average 14 pounds or more per inch using the standard dead weight friction test as above provided.

(f) The strength of the union between cushion and plies shall average 16 pounds or more per inch using the standard dead weight friction test as above provided.

3. INSPECTION. The Government reserves the right to make any inspection, test or analysis necessary to insure the product meeting all requirements of this specification.

(a) Casings will not be given consideration unless the maker submitting the bid has previously tested and reported on the casings to the Government, stating that the casings to be delivered are the same construction and practically duplicate, in construction and material, casings which he has previously tested satisfactorily with paragraphs (a) and (b), and a sufficient number of casings satisfactory to the Government, not less than six, have averaged on the rear wheels at least 5,000 miles.

(b) The use of oil or any other material known to be improperly used in accordance with the standard practice of tire manufacturers.

4. TREAD. A this shall be furnished with each casing, as in standard commercial practice.

5. COMPOUNDS. (a) Tread—The tread shall be made from and have the characteristics of a compound containing at least 70 per cent by volume of the best quality new wild or plantation rubber. The minimum tensile strength shall be 2,000 pounds to the square inch, with a minimum elongation of 500 per cent (2 to 12 inches) as determined by the average of four test pieces evenly stretched at the rate of 30 inches per minute. The test pieces shall be cut longitudinally and shall be $\frac{3}{4}$ -inch wide over a gage length of two inches, the ends being gradually enlarged to a width of approximately one inch. The permanent set determined by the average of four test pieces at the test piece as above shall not exceed 25 per cent after elongation of 400 per cent (2 to 10 inches) for ten minutes, followed by a rest of ten minutes. All tests shall be made at a temperature between 65 and 90 degrees F.

(b) Friction and Cushion—These shall be made from and have the characteristics of a compound containing at least 85 per cent by volume of the best quality new wild or plantation rubber.

(c) Sidewall—The sidewall shall be made from and have the characteristics of a compound containing a minimum of 65 per cent by volume of the best quality new wild or plantation rubber. The minimum tensile strength of 1,500 pounds per square inch and a minimum elongation of 450 per cent (2 to 11 inches). The permanent set shall not exceed 25 per cent after elongation of 400 per cent (2 to 10 inches) for ten minutes, followed by a rest of ten minutes. All tests shall be made at a temperature between 65 and 90 degrees F.

(d) All above test pieces must be cut from casings.

(e) The above compounds shall be free of ingredients known to the rubber trade as oil substitutes and/or reclaimed rubber.

(f) INSPECTION. The Government reserves the right to make any inspection, test or analysis necessary to insure the product meeting all requirements of this specification.

(g) WRAPPING AND MARKING—All casings shall be spirally wrapped according to standard practice and properly labeled on the outside, showing the size and type, and name of manufacturer. A label with the month and year of manufacture stamped on it shall be pasted in a conspicuous place.

(h) PACKING. Packing shall be as per specifications accompanying the request for bid.

PNEUMATIC AUTOMOBILE CASINGS (RIBBED OR NON-SKID).

SIZE 35 BY 5 INCHES.

CORD CONSTRUCTION.

Specification No. 1069A.

NOVEMBER 1, 1918.

1. GENERAL. (a) Pneumatic automobile casings manufactured in accordance with this specification shall be of cord construction, of the size known to the trade as 35 by 5 inches.

(b) Casings must be delivered to carry a load of 1,500 pounds when inflated to 75 pounds per square inch.

(c) Manufacturer of casings must guarantee them to be free from defects in material and workmanship.

(d) Casings shall be plainly marked with manufacturer's name, serial number and size of tire.

(e) As well as possible, it is desired that all casings be marked with the equivalent metric sizes as recommended by the Society of Automotive Engineers.

(f) All casings manufactured in accordance with this specification shall be of the manufacturer's standard non-skid or ribbed (as ordered) straight side type designed for the standard S. A. E. straight side rim of the size 33 by 4 inches.

(g) CONSTRUCTION. (a) Carcass of casing shall consist of not less than four nor more than ten separate plies of cord applied in such a manner that an equal number of plies shall run in each diagonal direction across the casing.

(b) All cord material to be of the best quality combed Sen Island or Salakhar cotton or their physical equivalent as approved by the Government.

(c) All cord fabric must be thoroughly dried according to standard manufacturing practice before it is started through the operations of rubberizing.

(d) The usual methods of inspection used by tire companies in commercial practice to discover defects in each roll of cord fabric shall be employed, and tests to determine tensile strength of cords shall be made on ten individual cords taken from each roll. The results shown must be up to the standard specification of the individual manufacturer.

(e) Two chafing strips of fabric weighing not less than eight ounces per square yard, shall be used on each side of the casing. Each chafing strip shall extend upward on the side of the casing at least 1 1/8 inches from the

heel of the bead. One chaining strip shall extend at least 3/16-inch above the other.

(1) There shall be a cushion of rubber compound applied over the cords which shall be wider than the breaker. The minimum gage of this cushion shall be 0.0625-inch.

(2) Over the cushion there shall be at least one breaker strip of open-weave fabric as is used in standard commercial practice, is coated on both sides with a rubber compound having the physical and chemical properties of a nature to form a perfect union between the cushion and tread when the cure is effected. This breaker strip shall have a minimum width of 3 1/2 inches. Breaker shall be made from long-staple Egyptian cotton or its physical equivalent as approved by the Government and shall weigh not less than ten ounces per square yard.

(b) The tread of the casing shall not be less than 7/16-inch thick in the center, 3/16-inch at the sides. The breaker strip shall be of the width of the tread under the middle of the non-skid portion.

(c) The sidewall of the casing shall have a minimum thickness of 0.0625-inch.

(d) PHYSICAL MEASUREMENTS AND TESTS. (1) Cross-sectional diameter of each tire inflated according to the recommended weight and load schedule of the S. A. E. shall be not less than 5.4 inches.

(2) Tires shall be capable of withstanding water pressure of 350 pounds per square inch without apparent injury. This test is to be made at the discretion of the inspector.

(3) The minimum strength of the casing shall be 2,500 pounds. This "strength factor" is the product of the number of cords per inch measured at the tread at right angles to the cords, multiplied by the strength of the individual cord as taken from the cord casing, multiplied by the number of plies.

(4) The strength of the union between breaker and tread and between breaker and cushion shall be not less than 32 pounds per inch, using the standard dead weight friction test as provided in paragraph No. 4, fabric casing specifications.

(5) Strength of the union between sidewall and plies shall average 14 pounds or more per inch, using the standard dead weight friction test as above provided.

(6) Strength of the union between cushion and plies shall average 16 pounds or more per inch, using the standard dead weight friction test as above provided.

5. ROAD TEST. Manufacturers bidding on government requirements must meet the following conditions:

(a) Casings will not be given consideration unless the maker submitting the bid furnishes an affidavit stating that he has maintained and will continue to maintain at least two cars used exclusively for test work, and that these cars average at least 1,000 car miles per car per week.

(b) The speeds, loads, tire sizes, inflation and road conditions must be such that the casings are properly tested. The Government may appoint an inspector to see that the above conditions are complied with.

(c) A bidder must supply an affidavit before delivering any casings to the Government, stating that the casings to be delivered are the same cross-section and practically duplicate, in construction and material, casings which he has previously tested in accordance with paragraphs (a) and (b), and a sufficient number of casings to be delivered to the Government, not less than six, have averaged on the rear wheels at least 5,000 miles.

6. LINING. The inside of each casing shall be properly lined in accordance with the standard practice of the rubber trade.

7. FLAPS. A flap shall be furnished with each casing, as in standard commercial practice.

8. COMPOUNDS. (a) Tread.—The tread shall be made from and have the characteristics of a compound containing at least 70 per cent by volume of the best quality new wild or plantation rubber. The minimum tensile strength shall be 20 pounds to the square inch, with a minimum elongation of 500 per cent (2 to 12 inches) as determined by the average of four test pieces when stretched at the rate of 20 inches per minute. The test pieces shall be cut longitudinally and the ends being gradually enlarged to a width of approximately one inch. The permanent set determined by the average of four tests with test pieces as above, shall not exceed 25 per cent after an elongation of 400 per cent (2 to 10 inches) for ten minutes, followed by a rest of ten minutes. All tests shall be made at a temperature between 65 and 90 degrees F.

(b) Friction and Cushion.—These shall be made from and have the characteristics of a compound containing at least 85 per cent by volume of the best quality new wild or plantation rubber.

(c) Sidewall.—The sidewall shall be made from and have the characteristics of a compound containing a minimum of 65 per cent by volume of the best quality new wild or plantation rubber. The minimum tensile strength shall be 16 pounds to the square inch and a minimum elongation of 450 per cent (2 to 11 inches). The permanent set shall not exceed a maximum of 25 per cent, tested as specified in 8(a).

(d) The above compounds shall be free of ingredients known to the rubber trade as oil substitutes and/or reclaimed rubber.

(e) INSPECTION.—The Government reserves the right to make any inspection, test or analysis necessary to insure the product meeting all requirements of this specification.

9. WRAPPING AND MARKING. All casings shall be spirally wrapped according to standard practice and properly labeled on the outside showing the size and type, and name of manufacturer. A label with the name and year of manufacture stamped on it shall be pasted in a conspicuous place.

11. PACKING. Packing shall be as per specifications accompanying the request for bid.

PNEUMATIC AUTOMOBILE CASINGS (RIBBED OR NON-SKID).

SIZE 36 BY 6 INCHES.

CORD CONSTRUCTION.

Specification No. 1070A.

NOVEMBER 1, 1918.

1. GENERAL. (a) Pneumatic automobile casings manufactured in accordance with this specification shall be of cord construction, of the size known to be made as by the inch.

(b) Casings must be designed to carry a load of 2,000 pounds when inflated to 90 pounds per square inch.

(c) The manufacturer of each casing must guarantee them to be free from defects in material and workmanship.

(d) Casings shall be plainly marked with manufacturer's name, serial number and size and to be as soon as possible, it is desired that all casings be marked with the equivalent metric sizes as recommended by the Society of Automotive Engineers.

2. TYPE. All casings manufactured in accordance with this specification shall be of the manufacturer's standard non-skid or ribbed (as ordered) straight side type designed for the standard S. A. E. straight side rim of the wheel by 6 inches.

3. CONSTRUCTION. (a) Carcass of casings shall consist of not less than four nor more than twelve separate pieces of cord applied in such a manner that the total number of plies shall run in each diagonal direction across the casing.

(b) All cord material to be of the best quality combed Sea Island or Salabrarides cotton or their physical equivalent as approved by the Government.

(c) All cord fabric must be thoroughly dried according to standard manufacturing practice before it is started through the operations of rubberizing.

(d) The usual methods of inspection used by tire companies in commercial practice shall be employed, and tests to determine tensile strength of cords shall be made on ten individual cords taken from each roll. The results shown must be up to the standard application of the individual manufacturer's specification.

(e) Two chaining strips of fabric weighing not less than eight ounces per square yard shall be used on each side of the casing. Each chaining strip shall extend upward on the side of the casing at least 1 1/2 inches from the heel of the bead. One chaining strip shall extend at least 3/16-inch above the other.

(f) There shall be a cushion of rubber compound applied over the cords which shall be wider than the breaker. The minimum gage of this cushion shall be 0.080-inch.

(g) Over the cushion there shall be at least one breaker strip of open-weave fabric as is used in standard commercial practice, is coated on both sides with a rubber compound having the physical and chemical properties of a nature to form a perfect union between the cushion and tread when the cure is effected. This breaker strip shall have a minimum width of 4 1/2 inches. Breaker shall be made from long-staple Egyptian cotton or its physical equivalent as approved by the Government and shall weigh not less than ten ounces per square yard.

(h) The tread of the casing shall not be less than 9/16-inch thick in the center, 7/32-inch of which shall be the minimum thickness for that part of the tread under the middle of the non-skid portion.

(i) The sidewall of the casing shall have a minimum thickness of 0.0625-inch.

(j) PHYSICAL MEASUREMENTS AND TESTS. (1) Cross-sectional diameter of each tire inflated according to the recommended weight and load schedule of the S. A. E. shall be not less than 6.1 inches.

(2) Tires shall be capable of withstanding water pressure of 350 pounds per square inch without apparent injury. This test is to be made at the discretion of the inspector.

(3) The minimum strength of the casing shall be 3,000 pounds. This "strength factor" is the product of the number of cords per inch measured at the tread at right angles to the cords, multiplied by the strength of the individual cord as taken from the cord casing, multiplied by the number of plies.

(4) The strength of the union between breaker and tread and between breaker and cushion shall be not less than 32 pounds per inch, using the standard dead weight friction test as provided in paragraph No. 4, fabric casing specifications.

(5) Strength of the union between sidewall and plies shall average 14 pounds or more per inch, using the standard dead weight friction test as above provided.

(6) Strength of the union between cushion and plies shall average 16 pounds or more per inch, using the standard dead weight friction test as above provided.

5. ROAD TEST. Manufacturers bidding on government requirements must meet the following conditions:

(a) Casings will not be given consideration unless the maker submitting the bid furnishes an affidavit stating that he has maintained and will continue to maintain at least two cars used exclusively for test work, and that these cars average at least 500 car miles per car per week.

(b) The speeds, loads (which may be of merchandise), tire sizes, inflation and road conditions must be such that the casings are properly tested. The Government may appoint an inspector to see that the above conditions are complied with.

(c) A bidder must supply an affidavit before delivering any casings to the Government, stating that the casings to be delivered are the same cross-section and practically duplicate, in construction and material, casings which he has previously tested in accordance with paragraphs (a) and (b), and a sufficient number of casings to be delivered to the Government, not less than four, have averaged on the rear wheels at least 5,000 miles.

6. LINING. The inside of each casing shall be properly lined in accordance with the standard practice of the rubber trade.

7. FLAPS. A flap shall be furnished with each casing, as in standard commercial practice.

8. COMPOUNDS. (a) Tread.—The tread shall be made from and have the characteristics of a compound containing at least 70 per cent by volume of the best quality new wild or plantation rubber. The minimum tensile strength shall be 20 pounds to the square inch, with a minimum elongation of 500 per cent (2 to 12 inches) as determined by the average of four test pieces when stretched at the rate of 20 inches per minute. The test pieces shall be cut longitudinally and the ends being gradually enlarged to a width of approximately one inch. The permanent set determined by the average of four tests with test pieces as above, shall not exceed 25 per cent after an elongation of 400 per cent (2 to 10 inches) for ten minutes, followed by a rest of ten minutes. All tests shall be made at a temperature between 65 and 90 degrees F.

(b) Friction and Cushion.—These shall be made from and have the characteristics of a compound containing at least 85 per cent by volume of the best quality new wild or plantation rubber.

(c) Sidewall.—The sidewall shall be made from and have the characteristics of a compound containing a minimum of 65 per cent by volume of the best quality new wild or plantation rubber. The minimum tensile strength shall be 16 pounds to the square inch and a minimum elongation of 450 per cent (2 to 11 inches). The permanent set shall not exceed a maximum of 25 per cent, tested as specified in 8(a).

(d) The above compounds shall be free of ingredients known to the rubber trade as oil substitutes and/or reclaimed rubber.

(e) INSPECTION.—The Government reserves the right to make any inspection, test or analysis necessary to insure the product meeting all requirements of this specification.

9. WRAPPING AND MARKING. All casings shall be spirally wrapped according to standard practice and properly labeled on the outside, showing the size and type, and name of manufacturer. A label with the month and

year of manufacture stamped on it shall be pasted in a conspicuous place.

(f) **PACKING.** Packing shall be as per specifications accompanying the request for bid.

PNEUMATIC AUTOMOBILE CASINGS (RIBBED OR NON-SKID).

SIZE 38 BY 7 INCHES.

CORD CONSTRUCTION.

Specification No. 1071A.

NOVEMBER 1, 1918.

1. **GENERAL.** (a) Pneumatic automobile casings manufactured in accordance with this specification shall be of cord construction, of the size known to the trade as No. 38.

(b) Casings must be designed to carry a load of 2,700 pounds when inflated to 100 pounds per square inch.

(c) The manufacturer of casings must guarantee them to be free from defects in material and workmanship.

(d) Casings shall be plainly marked with manufacturer's name, serial number and size of tire.

(e) As soon as possible, it is desired that all casings be marked with the equivalent metric sizes as recommended by the Society of Automotive Engineers.

2. **TYPE.** All casings manufactured in accordance with this specification shall be of the manufacturer's standard non-skid or ribbed (as ordered) straight side type designed for the standard S. A. E. straight side rim of the size 38 by 7 inches.

3. **CONSTRUCTION.** (a) Carcass of casing shall consist of not less than four not more than sixteen separate plies of cord applied in such a manner that an equal number of plies shall run in each diagonal direction across the casing.

(b) All cord material to be of the best quality combed Sea Island or Sakellandes cotton or their physical equivalent as approved by the Government.

(c) All cord fabric must be thoroughly dried according to standard manufacturing practice before it is started through the operation of rubberizing.

(d) The usual methods of inspection used by tire companies in commercial practice to discover defects in each roll of cord fabric shall be employed, and tests to determine tensile strength of cords shall be made on ten individual cords taken from each roll. The results shown must be up to the standard specification of the individual manufacturer.

(e) Two chafing strips of fabric weighing not less than twelve ounces per square yard, shall be used on each side of the casing. Each chafing strip shall extend upward on the side of the casing at least $\frac{1}{4}$ inch from the heel of the bead. One chafing strip shall extend at least $\frac{3}{4}$ inch above the other.

(f) There shall be a cushion of rubber compound applied over the cords which shall be wider than the breaker. The minimum gage of this cushion shall be 0.090 inch.

(g) Over the cushion there shall be at least one breaker strip of open-weave fabric such as is used in standard commercial practice, coated on both sides with a rubber compound having the physical and chemical properties of a nature to form a perfect union between the cushion and tread when the cure is effected. This breaker strip shall have a minimum width of $\frac{5}{8}$ inches. Breaker shall be made from long-staple Egyptian cotton or their physical equivalent as approved by the Government and shall weigh not less than eighteen ounces per square yard.

(h) The tread of the casing shall be not less than $\frac{1}{4}$ inch thick in the center, $\frac{3}{8}$ inch at each side, and the minimum thickness for that part of the tread under the middle of the non-skid portion.

(i) The sidewall of the casing shall have a minimum thickness of 0.0625 inch.

4. **PHYSICAL MEASUREMENTS AND TESTS.** (a) Cross-sectional diameter of each tire inflated according to the recommended weight and load schedule of the S. A. E. shall be not less than 7.35 inches.

(b) Tires shall be capable of withstanding water pressure of 350 pounds per square inch without apparent injury. This test is to be made at the discretion of the inspector.

(c) The minimum strength of the casing shall be 3,500 pounds. This "strength factor" is the product of the number of cords per inch measured at the tread at right angles to the cords, multiplied by the strength of the individual cord as taken from the cord casing, multiplied by the number of plies.

(d) The strength of the union between breaker and tread and between breaker and cushion shall be not less than 32 pounds per inch using the standard dead weight friction test as provided in paragraph No. 4, fabric casing specifications.

(e) Strength of the union between sidewall and weight friction test as 40 pounds or more per inch, using the standard dead weight friction test as above provided.

(f) Strength of the union between cushion and plies shall average 16 pounds or more per inch, using the standard dead weight friction test as above provided.

5. **ROAD TEST.** Manufacturers bidding on government requirements must meet the following conditions:

(a) Casings will not be given consideration unless the maker submitting the bid furnishes an affidavit stating that he has maintained, and will continue to maintain, at least two cars used exclusively for test work, and that these cars average at least 500 car miles per car per week.

(b) The speeds, loads (which may be of merchandise), tire sizes, inflation and road conditions must be such that the casings are properly conditioned. The Government may appoint an inspector to see that the above conditions are complied with.

(c) A bidder must supply an affidavit before delivering any casings to the Government stating that the casings to be delivered are the same cross-section and practically duplicate, in construction and material, casings which he has previously tested in accordance with paragraphs (a) and (b), and a sufficient number of casings satisfactory to the Government, not less than four, have averaged on the rear wheels at least 5,000 miles.

6. **LINING.** The inside of each casing shall be properly lined in accordance with the standard practice of the manufacturer.

7. **FLAPS.** A flap shall be furnished with each casing, as in standard commercial practice.

8. **CHARACTERISTICS.** (a) **Tread.** The tread shall be made from and have the characteristics of a compound containing at least 70 per cent by volume of the best quality new wild or plantation rubber. The minimum tensile strength shall be 4,000 pounds to the square inch, with a minimum elongation of 200 per cent (2 to 10 inches) as determined by the average of four test pieces when stretched at the rate of 10 inches per minute. The test pieces shall be cut longitudinally and shall be $\frac{1}{2}$ inch wide over a gage length of 2 inches, the ends being gradually enlarged to a width of approximately one inch. The permanent set determined by the average of four tests with test pieces as above, shall not exceed 25 per cent after an elongation of 400 per cent (2 to 10 inches) for ten minutes, followed by a rest of ten minutes. All tests shall be made at a temperature between 65 and 90 degrees F.

(b) **Friction and Cushion.**—These shall be made from and have the characteristics of a compound containing at least 85 per cent by volume of the best quality new wild or plantation rubber.

(c) **Sidewall.**—The sidewall shall be made from and have the characteristics of a compound containing a minimum of 65 per cent by volume of the best quality new wild or plantation rubber. The compound shall have a minimum tensile strength of 1,500 pounds per square inch and a minimum elongation of 450 per cent (2 to 10 inches). The permanent set shall not exceed a maximum of 25 per cent, tested as specified in 8(a).

(d) All above test pieces must be cut from casings.

(e) The above compounds shall be free of ingredients known to the rubber trade as substitutes and/or reclaimed rubber.

9. **INSPECTION.** The Government reserves the right to make any inspection, test or analysis necessary to insure the product meeting all requirements of this specification.

10. **WRAPPING AND MARKING.** All casings shall be spirally wrapped according to standard practice and strictly labeled on the outside showing the size and type, and name of manufacturer. A label with the month and year of manufacture stamped on it shall be pasted in a conspicuous place.

11. **PACKING.** Packing shall be as per specifications accompanying the request for bid.

PNEUMATIC AUTOMOBILE CASINGS (RIBBED OR NON-SKID).

SIZE 40 BY 8 INCHES.

CORD CONSTRUCTION.

Specification No. 1072A.

NOVEMBER 1, 1918.

1. **GENERAL.** (a) Pneumatic automobile casings manufactured in accordance with this specification shall be of cord construction of the size known to the trade as No. 40 by 8 inches.

(b) Casings must be designed to carry a load of 3,650 pounds when inflated to 100 pounds per square inch.

(c) The manufacturer of casings must guarantee them to be free from defects in material and workmanship.

(d) Casings shall be plainly marked with manufacturer's name, serial number and size of tire.

(e) As soon as possible, it is desired that all casings be marked with the equivalent metric sizes as recommended by the Society of Automotive Engineers.

2. **TYPE.** All casings manufactured in accordance with this specification shall be of the manufacturer's standard non-skid or ribbed (as ordered) straight side type designed for the standard S. A. E. straight side rim of the size 40 by 8 inches.

3. **CONSTRUCTION.** (a) Carcass of casing shall consist of not less than four not more than sixteen separate plies of cord applied in such a manner that an equal number of plies shall run in each diagonal direction across the casing.

(b) All cord material to be of the best quality combed Sea Island or Sakellandes cotton or their physical equivalent as approved by the Government.

(c) All cord fabric must be thoroughly dried according to standard manufacturing practice before it is started through the operations of rubberizing.

(d) The usual methods of inspection used by tire companies in commercial practice to discover defects in each roll of cord fabric shall be employed, and tests to determine tensile strength of cords shall be made on ten individual cords taken from each roll. The results shown must be up to the standard specification of the individual manufacturer.

(e) Two chafing strips of fabric weighing not less than twelve ounces per square yard, shall be used on each side of the casing. Each chafing strip shall extend upward on the side of the casing at least two inches from the heel of the bead. One chafing strip shall extend at least $\frac{3}{4}$ inch above the other.

(f) There shall be a cushion of rubber compound applied over the cords which shall be wider than the breaker. The minimum gage of this cushion shall be 0.090 inch.

(g) Over the cushion there shall be at least one breaker strip of open-weave fabric such as is used in standard commercial practice, coated on both sides with a rubber compound having the physical and chemical properties of a nature to form a perfect union between the cushion and tread when the cure is effected. This breaker strip shall have a minimum width of $\frac{5}{8}$ inches. Breaker shall be made from long-staple Egyptian cotton or their physical equivalent as approved by the Government and shall weigh not less than eighteen ounces per square yard.

(h) The tread of the casing shall be not less than $\frac{1}{4}$ inch thick in the center, $\frac{3}{8}$ inch at each side, and the minimum thickness for that part of the tread under the middle of the non-skid portion.

(i) The sidewall of the casing shall have a minimum thickness of 0.0625 inch.

4. **PHYSICAL MEASUREMENTS AND TESTS.** (a) Cross-sectional diameter of each tire inflated according to the recommended weight and load schedule of the S. A. E. shall be not less than 8.4 inches.

(b) Tires shall be capable of withstanding water pressure of 350 pounds per square inch without apparent injury. This test is to be made at the discretion of the inspector.

(c) The minimum strength of the casing shall be 4,000 pounds. This "strength factor" is the product of the number of cords per inch measured at the tread at right angles to the cords, multiplied by the strength of the individual cord as taken from the cord casing, multiplied by the number of plies.

(d) The strength of the union between breaker and tread and between breaker and cushion shall be not less than 32 pounds per inch using the standard dead weight friction test as provided in paragraph No. 4, fabric casing specifications.

(c) Strength of the union between sidewall and plies shall average 14 pounds or more per inch, using the standard dead weight friction test as above provided.

(d) Strength of the union between cushion and plies shall average 16 pounds or more per inch, using the standard dead weight friction test as above provided.

5. **ROAD TEST.** Manufacturers bidding on government requirements must make the following conditions:

(a) Casings will not be given consideration unless the maker submitting the bid furnishes an affidavit stating that he has maintained and will that these cars average at least 500 miles per car per week.

(b) The speeds, loads (which may be merchandise), tire sizes, inflation, and road conditions must be such that the casings are properly tested. The Government may appoint an inspector to see that above conditions are complied with.

(c) A bidder must supply an affidavit before delivering any casings to the Government, stating that the casings to be delivered are the same cross-section and practically duplicate, in construction and material, casings which he has previously tested in accordance with paragraphs (a) and (b), and a sufficient number of casings satisfactory to the Government, not less than four, have averaged on the rear wheels at least 5,000 miles.

6. **LIVING.** The inside of each casing shall be properly lined in accordance with the standard practice of tire manufacture.

7. **FLAPS.** A flap shall be furnished with each casing, as in standard commercial practice.

(a) **Tread.**—The tread shall be made from and have the characteristics of a compound containing at least 70 per cent by volume of the best quality new wild or plantation rubber. The minimum tensile strength shall be 2,000 pounds per square inch, with a minimum elongation of 500 per cent (2 to 12 inches) as determined by the average of four test pieces when stretched at the rate of 20 inches per minute. The test pieces shall be 1/2 inch wide, 1/4 inch thick, 1/2 inch long, and 1/2 inch wide at each end, the ends being gradually enlarged to a width of approximately one inch. The permanent set determined by the average of five tests with the test pieces at 25 per cent elongation shall be an elongation of 400 per cent (2 to 10 inches) for ten minutes, followed by a rest of ten minutes. All tests shall be made at a temperature between 65 and 80 degrees F.

(b) **Friction.**—These shall be made from and have the characteristics of a compound containing at least 85 per cent by volume of the best quality new wild or plantation rubber.

(c) **Sidewall.**—The sidewall shall be made from and have the characteristics of a compound containing a minimum of 65 per cent by volume of the best quality new wild or plantation rubber, with a minimum tensile strength of 1,500 pounds per square inch and a minimum elongation of 450 per cent (2 to 11 inches). The permanent set shall not exceed a maximum of 25 per cent, tested as specified in (8a).

(d) **Substitutes.**—The Government reserves the right to make any inspection, test or analysis necessary to insure the product meeting all requirements of this specification.

(e) **WRAPPING AND MARKING.**—All casings shall be spirally wrapped according to standard practice and properly labeled on the outside showing the size and type, and name of manufacturer. A label with the month and year of manufacture and a sample of the finished uncured stock.

(f) **PACKING.** Packing shall be as per specifications accompanying the request for bid.

SOLID MOTOR TIRES.

Specification No. 1074.

NOVEMBER 1, 1918.

1. **TYPE.** The tires to be furnished shall be "pressed on" type, provided with the standard channel base band of tire manufacturers, and shall be suitable for pressing onto S. A. E. standard felloe bands for commercial sized wheels of vehicles built to S. A. E. tolerance for artillery wheels.

2. **RUBBER.** The rubber compound shall contain not less than 65 per cent by volume of best quality new wild or plantation rubber. If reclaimed rubber or mixed rubber is used, it must be in addition to the 65 per cent of new rubber required, and the manufacturer must declare the amount and kind of reclaimed rubber or rubber substitutes used in his compound. The tire of "reformed" or ground vulcanized rubber in the compounds will not be permitted.

3. **SULPHUR.** The total sulphur shall not be more than 8 per cent of the weight of the new rubber used except as follows: if the manufacturer desires to use sulphur-bearing fillers, thereby causing the total sulphur to be over 8 per cent of the weight of new rubber, he must submit a sample of the finished uncured stock. Such stock shall not show a sulphur content in the acetone extract of over 8 per cent of the weight of new rubber used.

4. **ANTIOXIDANTS.** The rubber compound shall be free from any poisonous oils, or anything harmful from them.

5. **CHEMICAL TESTS.** Where chemical tests are used, they shall be made in accordance with the Bureau of Standards methods.

6. **TENSILE STRENGTH.** The average tensile strength of rubber compound shall not be less than 1,800 pounds per square inch, with a minimum elongation of 400 per cent (2 to 12 inches) as determined by the average of four test pieces when stretched at the rate of 20 inches per minute. The test pieces shall be 1/2 inch wide, 1/4 inch thick, 1/2 inch long, and 1/2 inch wide at each end, the ends being gradually enlarged to a width of approximately one inch. The permanent set determined by the average of five tests with the test pieces at 25 per cent elongation shall be an elongation of 400 per cent (2 to 10 inches) for ten minutes, followed by a rest of ten minutes. All tests shall be made at a temperature between 65 and 80 degrees F.

7. **FRICITION.** The friction shall be made from and have the characteristics of a compound containing at least 85 per cent by volume of the best quality new wild or plantation rubber.

8. **WRAPPING AND MARKING.**—All casings shall be spirally wrapped according to standard practice and properly labeled on the outside showing the size and type, and name of manufacturer. A label with the month and year of manufacture and a sample of the finished uncured stock.

9. **PACKING.** Packing shall be as per specifications accompanying the request for bid.

the tread a band 1/2 inch thick with inside diameter 1 1/2 inches larger than outside diameter of band of base band. The corners of the band to be rounded with 1/4 inch radius. The various sizes of tires are to be submitted respectively to pressures in accordance with the following table. For the tire to pass successfully, the hard rubber must not break loose from the base.

Size of Tire.	In. Dia. of Rim.	Lbs. in Tons Press. on Tire.	Size of Tire.	In. Dia. of Rim.	Lbs. in Tons Press. on Tire.
32 by 3	29	175	32 by 3 1/2	29	220
32 by 3 1/2	31	175	32 by 3 1/2	31	220
36 by 3	33	9	36 by 3 1/2	33	11
32 by 4	29	325	32 by 5	29	400
34 by 4	31	16	34 by 5	31	19
36 by 4	33	16	36 by 5	33	21
38 by 4	35	18	38 by 5	35	23
40 by 4	37	19	40 by 5	37	23
42 by 4	39	20	42 by 5	39	24
34 by 6	29	475	36 by 6	33	550
36 by 6	31	23	38 by 6	35	30
38 by 6	33	24	40 by 6	37	31
40 by 6	35	25	42 by 6	39	32
42 by 6	37	26	36 by 8	33	29
44 by 6	39	29	40 by 8	37	33
1.110 by 100 mm.	47	325	1.000 by 125 mm.	43	400

11. **REBOUND TEST.** The rebound shall be not less than 50 as measured by the Whitworth rebounder. The tire will be held at 70 degrees F. for a period of 24 hours before testing and the instrument shall be mounted rigidly in a vertical position. The tire shall be hung on a horizontal support.

12. **NUMBER OF TIRES TO BE TESTED.** One tire in each lot of five hundred (the tire to be selected by the inspector) shall be tested, and if the tire subjected to this test fails to meet the requirements of the test, the lot of tires represented by it will be accepted, including the tire on which the test has been made. If the tire subjected to test fails to fulfil the requirements of the specification, the lot of tires represented by it will be rejected. If, however, the maker of the tires demands a further test, three additional tires shall be selected by the inspector, and if one of these three tires fails to fulfil the requirements, the lot of tires represented by it will be rejected. If, however, the maker of the tires demands a further test, three additional tires shall be selected by the inspector, and if one of these three tires fails to fulfil the requirements, the lot of tires represented by it will be rejected. If, however, the maker of the tires demands a further test, three additional tires shall be selected by the inspector, and if one of these three tires fails to fulfil the requirements, the lot of tires represented by it will be rejected.

13. **ROAD TEST.** Manufacturers bidding on government requirements must make the following conditions:

(a) Casings will not be given consideration unless the maker submitting the bid furnishes an affidavit stating that he has maintained and will continue to maintain at least one truck used exclusively for test work, and that this truck averages at least 500 miles per truck per week.

(b) The speeds, tire sizes, loads (which may be merchandise), and road conditions must be such that the tires are properly tested. The Government may appoint an inspector to see that above conditions are complied with.

(c) A bidder must supply an affidavit before delivering any tires to the Government, stating that the tires to be delivered are the same cross-section and materially of the same type, which he has previously tested in accordance with paragraphs (a) and (b), and a sufficient number of tires satisfactory to the Government, not less than four, have averaged on the rear wheels, at least 7,000 miles.

Tests on tires of 5 inch cross-section size, or larger, will be considered by the Government as being made on tires of 4 1/2 inch cross-section size.

14. **MARKING.** All tires will have marked on the side of the tread rubber, the tire size, i. e., the width and diameter and also the rubber compound number. The tread rubber will also have marked, month and year of manufacture, and name of the manufacturer.

The tires shall also have marked, by stamping deeply into the steel tire channel, the tire serial number and a symbol representing the name of the manufacturer. The above data shall be stamped under the overhanging edge of the steel channel. In case of artillery tires they shall be marked according to blue-print submitted.

15. **SECTION OF TIRES.**—Full-size drawings shall be submitted with proposals showing the exact section of the tires which it is proposed to furnish. The inside section of the actual tire in each size shall also be submitted.

16. **WEIGHTS AND AREAS.** The total weight of tire, weight of rubber, weight of base band, together with the weight of the area of tread rubber in tire, and also the area of tread rubber above the tread channels must be definitely stated in proposals, and this data will be given in connection with the drawings.

17. **GROOVING OF TIRES.**—Tire 10 inches in width and larger shall be provided with approved grooving on face of tire.

18. **GRADING.** The manufacturer of the tires must guarantee them to be free from defects in material and workmanship.

19. **BASE BAND.**—The tire base shall be made of open hearth steel and rolled to approximate finished dimensions. Chemical analysis shall be as follows: carbon, 0.12 to 0.12-0.17; phosphorus, 0.03 to 0.05; manganese, 0.35 to 0.55; phosphorus less than 0.04; sulphur less than 0.05.

20. **WELDING.** The base band shall be electrically welded. They shall be truly circular and free from appreciable warp.

21. **INSTRUCTIONS OF BASE BANDS.** The inside circumference of base bands of standard size and S. A. E. tolerance shall be in accordance with standard practice of tire manufacturers, but manufacturer must guarantee that the tire shall not come off when applied to standard S. A. E. wheels. Tires made for artillery wheels shall have the inside circumference of base bands made in accordance with dimensions and tolerance given on Ordnance Department drawings.

22. **TO DETERMINE THE EFFECTIVENESS OF THE WELDING PROCESS** used pieces of base band metal not less than 8 inches in length will be welded together and turned down to a standard specimen and three such samples containing welds placed in a testing machine. The total pull required to separate the welds shall be not less than 45,000 pounds per square inch of cross section.

23. **IN ORDER TO DETERMINE WHETHER THE BASE BANDS ARE BEING PROPERLY WELDED** the welds must be tested in the manner described above. The strength of the welds in production shall be not less than 45,000 pounds per square inch of cross section.

24. **PREPARATION FOR SHIPMENT.** (a) **Painting.**—Paint metal base with rust-resisting paint.

(b) **Wrapping.**—No wrapping required.

(c) **Marking.**—Shipping instructions to be shown on printed label pasted

to make at tire band and with a protective coating of silicate of soda over the latex.

PNEUMATIC INNER TUBES (GREY).

Specification No. 1062A.

NOVEMBER 1, 1918.

1. **GENERAL.** This specification covers the following sizes:

28 by 3	31 by 4	35 by 6
28 by 3 1/2	31 by 4 1/2	35 by 6 1/2
30 by 3 1/2	35 by 5	40 by 8

(b) All tubes manufactured to this specification shall be of the endless type, except motorcycle tubes which shall be butt end or endless as ordered. (c) All tubes shall be free from defects and guaranteed as to material and workmanship.

(d) Compound used. Tubes shall be made from and have the characteristics on a compound containing a minimum of 93 per cent by volume of the best quality raw rubber (thick cut) and sulphur content shall not exceed 7 per cent by weight of new rubber used.

(e) The tensile strength of the compound shall not exceed 55 lbs. per sq. inch and the elongation at break shall not exceed 400 per cent.

(f) Compound shall be free from materials known to the trade as oil substitutes and/or reclaimed rubber.

2. **GAGES.** (a) Tubes shall fill the specification in the following table for minimum gaging pole size, minimum gages and minimum length:

Size	Minimum Pole Size.	Minimum Thickness.	Minimum Finished Length.
28 by 3	1 1/2 inches	0.075 inch	77 inches
28 by 3 1/2	2 1/2 inches	0.090 inch	78 inches
30 by 3 1/2	2 1/2 inches	0.090 inch	81 inches
31 by 4	2 1/2 inches	0.095 inch	82 inches
31 by 4 1/2	2 1/2 inches	0.110 inch	89 inches
33 by 5	3 inches	0.115 inch	92 inches
35 by 6	3 1/2 inches	0.180 inch	92 inches
35 by 6 1/2	4 1/2 inches	0.210 inch	94 inches
40 by 8	5 inches	0.250 inch	96 inches

(b) In case tube is mold-cured, measurements must be equivalent to above as determined by volume. If larger-sized poles are used volume of rubber shall be at least equal to above measurements.

4. **SPlice.** The splice shall be as strong as the rest of the tube under the inflation test.

5. **VALVES.** Each tube shall be fitted with one complete Schrader valve, or its approved equal, applied in such a manner as not to leak or tear out under ordinary usage. The following schedule shall apply:

28 by 3	Schrader's	No. 1936
28 by 3 1/2	Schrader's	No. 1936
30 by 3 1/2	Schrader's	No. 725
31 by 4	Schrader's	No. 725
31 by 4 1/2	Schrader's	No. 725
33 by 5	Schrader's	No. 792
35 by 6	Schrader's	No. 2033
35 by 6 1/2	Schrader's	No. 2033
40 by 8	Schrader's	No. 2033

Each valve shall be fitted with lock nut, rim nut and valve cap. Dust cap shall be furnished for all valves with the exception of 28 by 3, 29 by 3 1/2, 36 by 6 and over. Spraders shall be furnished for all sizes up to and including 35 by 5.

6. **MARKING.** Tubes shall be plainly marked with the manufacturer's name and size of tube, in both inch and the metric equivalent in accordance with S. A. E. standards.

7. **TESTS AND INSPECTION.** (a) Chemical and physical tests shall be made from each lot of one thousand tubes or less in order to secure deliveries of uniform quality, and in accordance with the requirements of these specifications. These tests and analyses shall be made in accordance with the procedure followed by the Bureau of Standards, Washington, D. C. The average results of four test pieces cut longitudinally from the tube shall show an ultimate elongation of not less than 750 per cent (1 to 8 1/2 inches) when stretched at the rate of 20 inches per minute. The thickness ends being gradually enlarged to a width of approximately one inch to provide a satisfactory gripping surface. The permanent set determined by the average of four tests with pieces as above, shall not exceed 10 per cent followed by an elongation of 500 per cent (2 to 6 inches) for 10 minutes followed by a rest of 10 minutes. All tests shall be made at a temperature between 65 and 80 degrees F.

(b) Each tube shall be tested for leaks by inflating with air and immersing in water.

(c) The Government reserves the right to make any inspection, test or analysis necessary to insure the product meeting all requirements of the specifications.

8. **PACKING.** Packing shall be as per specifications accompanying request for bid.

AUTOMOBILE TIRE ACCESSORIES.

Specification No. 1073A.

NOVEMBER 1, 1918.

1. **BLOW-OUT PATCHES.** These are recommended only for emergency repairs. A vulcanized repair should be made as soon as possible.

Patches must be made of at least six plies of seven-ounce fabric or its equivalent weight of fabric, as specified by the Government. The plies must be properly stepped down, according to good commercial practice. Two ears are required on all patches. The length of the patch must be according to the manufacturer's standard commercial practice. The 4 and 3 1/2-inch must be designed for use with clincher fabric tires and the 4, 4 1/2, and 5-inch must be of ample size for use with cord tires.

2. **REPAIRS.** Patches shall be one standard size, 1 1/2 inches in diameter. The gage and compound of the stock must comply with the specification for cured-back tube stock as given in the repair material specification. Patches must be molded, and the edges are preferred.

3. **RELINERS.** These are recommended only in case of extreme necessity. All sizes up to 4 inches must be made of at least three plies, while 4 and larger must be made of at least four plies of seven-ounce fabric or its equivalent, as approved by the Government. The plies must be built up on the bias and a lap of at least 6 inches is required. The edges

must be properly stepped off on the sides and skived on the ends to insure against injury to the tube. Each repair must be designed so that its width will be such as to properly fit the standard tire of that size. This includes 3 and 3 1/2-inch in fabric clincher and 4-inch or larger in cord tires. The edge must be approximately 1/4-inch above the toe of the bead.

4. **FLAPS.** Motorcycle flaps must be of the cemented-in type and equal in construction and quality to the flap supplied by the bidder on tires made to government specifications.

5. **STRAIGHT SIDE CORD TIRE FLAPS** must be of the floating type and equal in construction and quality to the flap supplied by the bidder on tires made to government specifications.

6. **PATCHES.** These patches must be made according to the manufacturer's standard practice from carded Egyptian, combed peeler cotton fabric, or their physical equivalent, as approved by the Government, weighing not less than 13 ounces per square yard.

The plies must be laid on the bias, fictioned or spread and skim-coated on both sides equally to a minimum gage of 0.043-inch. The compound must fill the specifications set forth in the repair material specifications covering friction, skim, cushion and tube stocks.

All sizes up to six-inch must be four plies and six-inch and above shall be six plies. Cord tires must be properly stepped down, and preference will be given to gum stripped ends to insure against injury to the tube. There shall be applied in the center of the back of the patch a padding of not less than 1/16-inch thick. The minimum length and breadth of the padding shall not be less than the length of pad specified below.

The following sizes are standard and lengths required are given in table:

3 1/2 and 4-inch patch—length 10 inches.	Length of pad 4 inches.
4 1/2 and 5-inch patch—length 11 inches.	Length of pad 5 inches.
6-inch patch—length 12 inches.	Length of pad 6 inches.
7-inch patch—length 13 inches.	Length of pad 7 inches.
8-inch patch—length 14 inches.	Length of pad 8 inches.

6. **VALVE ACCESSORIES.** (a) **VALVES.** Schrader's 1936 or approved equivalent for motorcycle tubes. Schrader's 725 or approved equivalent for 3 1/2 and 4-inch auto tubes.

Schrader's 792 or approved equivalent for 4 1/2 and 5-inch auto tubes. Schrader's 2033 or approved equivalent for 6-inch tubes and larger.

(b) Valve caps. Schrader's 880 or approved equivalent.

(c) Valve insides. Schrader's 1801 or approved equivalent.

(d) Tire gage. Schrader's straight Universal gage or approved equivalent for small cars and motorcycles.

Schrader's right-angle gage or approved equivalent for large cars and pneumatic-tired trucks.

(e) Pump connection: Schrader's Universal No. 2238 or approved equivalent.

(f) Deflating caps: Schrader's No. 1886 or approved equivalent.

(g) Valve repair kit: Schrader's No. 2395 or approved equivalent.

7. **REPAIR KITS.** Repair kits shall be made up with the following material—packed in a round cardboard carton with tin ends and cover, approximately 2 1/2 inches in diameter and 2 1/2 inches deep.

It shall contain:—

- 6 standard cementless patches. Refer to Specification No. 1073A—2.
- Strip of cured-back tube gum 2 by 8 inches in diameter or equivalent.
- Tube of cement 2 1/2 by 1/2 inches in diameter or equivalent.
- Piece of sandpaper 2 by 8 inches or equivalent.
- 2 valve insides.
- 1 valve cap.

Carton to be labeled as follows:

DIRECTIONS

For Temporary Tube Repairs.

For repairing small punctures use "Cementless Patches." Roughen the tube with sandpaper, then apply cement and allow to dry. Remove cloth from patch and apply. Tube can be used at once.

For repairing blow-outs use combination repair stock. Roughen tube around cut with sandpaper, then apply coat of cement around cut, bringing edges of cut together over center of stock. Apply another coat of cement outside of tube and allow to dry. Cut and place sand size piece of combination stock outside of tube over center of blow-out. Tube can be used immediately.

NOTE: Always remove cloth from patch and combination stock before applying and place cloth side next to tube.

REPAIR MATERIAL FOR PNEUMATIC TIRES.

Specification No. 1067A.

NOVEMBER 1, 1918.

1. **FABRIC.** Only Four Types Necessary. (a) **Standard-Weave Building Fabric.** This fabric shall be 17 to 19 ounces per square yard with an allowable variation of 3 per cent plus or minus. It shall be 23 by 23 weave. The fabric shall be made from long-staple cotton with a tensile strength for both warp and weft of at least 150 pounds per inch. Methods of testing to be the same as specified in the fabric casing specifications. The fabric shall be frictioned both sides and skim-coated one side to a minimum gage of 0.043-inch.

(b) **Cord Builder Fabric.** This fabric shall be made from long-staple carded Egyptian or combed peeler cotton, or their physical equivalent as approved by the Government, weighing not less than 13 ounces per square yard. The cord fabric shall be frictioned or spread both sides and skim-coated equally on both sides to a gage of 0.050-inch.

(c) **Breaker Fabric.** This breaker shall be an open-weave fabric of at least 10 ounces per square yard. It shall be made from long-staple cotton. It shall be frictioned or spread and also skim-coated equally on both sides. The minimum gage shall be 0.070-inch.

(d) **COMPOUNDING MIXTURES.** (a) **Friction, skim, cushion and tube repair stock.** Specific gravity not to be over 1.30. These

shall be made from and have the characteristics of a compound containing at least 65 per cent by volume of new wild or plantation rubber. Compound shall contain no reclaimed rubber. The compound shall be free of ingredients known to the rubber trade as oil substitutes.

(b) Two tread stocks shall be used. These shall be a black stock of specific gravity not over 1.60 and a white or grey stock of specific gravity not over 1.50. The treads shall be made from and have the characteristics of a compound containing at least 50 per cent by volume of the best quality new wild or plantation rubber. The kind and quality of the reclaimed rubber must be declared when used. The compound shall be free of ingredients known to the rubber trade as oil substitutes. The tensile strength of a properly cured "tread" sample shall be 2,000 ounces per square inch with a minimum elongation of 400 per cent (2 to 10 inches) as determined by the average of four test pieces when stretched at the rate of 20 inches per minute. The test pieces shall be cut $\frac{1}{8}$ -inch wide over a gage length of two inches, the ends being gradually enlarged to a width of approximately one inch. The permanent set determined by the average of four tests with test pieces as above, shall not exceed 30 per cent after an elongation of 350 per cent (2 to 9 inches) for ten minutes, followed by a rest of ten minutes. All tests shall be made at a temperature between 65 and 90 degrees F.

(c) Sidewall Stocks.—Use tread stock.

(d) Kettled, Non-curedd Heels.—The repair tread stock specifications, specifications for the tread (tread and cushion stocks). The gage of the raw gum shall be not less than 0.015. The gage of the cured gum shall be not less than 0.015.

3. CEMENT.—TWO CEMENTS ONLY. (a) Vulcanizing Cement. This cement shall be made from a compound having a maximum specific gravity of 1.15 containing at least 75 per cent by volume of the best quality new wild or plantation rubber and shall be free from ingredients known to the rubber trade as oil substitutes and/or reclaimed rubber. It shall be dissolved in benzol. The rubber compound content by weight to be determined by evaporation and milled to constant weight, shall be not less than 17 per cent of the total weight of the cement.

(b) Acid Cure Cement. This cement to be made from the best quality new wild or plantation rubber with no other ingredients with a benzol solvent. The pure rubber content weight to be determined by evaporation and milled to a constant weight, shall be not less than 6 per cent of the total weight of the cement. The acid solution used with this cement shall be 2 per cent monochloride of sulphur and 98 per cent benzol.

4. Cure. The base cure on a 4-inch section for repair material should be based on 45 minutes at 50 pounds steam pressure, it being understood that cure is to be made under proper conditions.

5. Prices. Repair materials will be purchased on a pound basis. For comparison of different quotations the specific gravity and price on the basis of volume must be submitted by the bidder in addition to the price on a weight basis, it being understood that the volume price shall be the price per square yard of the gage specified in the request for bid.

6. VALVE BASKS. Two sizes designated as large and small will be required. The standard commercial, after sample bases have been submitted to be approved by the Government, will be accepted.

7. AIR BAGS. The air bags shall be made according to the standard practice and design of the manufacturer. A sample section of the bag showing the correct reinforcement and construction of the bag must be submitted to the Government for approval. Bags must be tested with 100 pounds air pressure and show no leaks when immersed in water.

THE FIRST SCREW-FORCING MACHINE.

THE well-known screw-forcing or tubing machine has long been the standard one for forming plastic materials into rods, tubes and an endless variety of other forms in continuous lengths, and may be found in nearly every rubber factory.

The Editor of "The India-Rubber Journal" wrote interestingly (July 7, 1917, page 13) of the introduction of the forcing machine to the rubber industry of Great Britain, remarking as follows:

The first forcing machines made their appearance in the late 'seventies or early 'eighties, and were, we think, the production of a Scotch firm, who had not previously been known as makers of rubber machinery. Some say it was an American invention, but though there are some early American patents referring to it, we do not think it was first made in America.

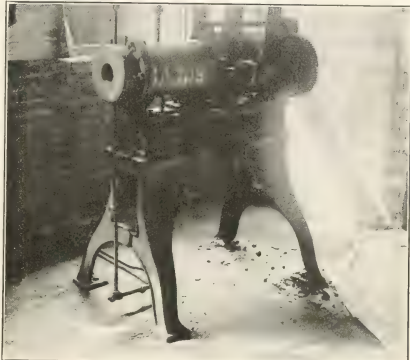
In another issue of the same journal (July 28, 1918, page 8), Mr. R. T. Cooke, for Francis Shaw & Company, Limited, communicated the interesting fact that the first British-made forcing machine was designed and made by the late Francis Shaw in 1878-1879, while in the employ of Messrs. Chas. Macintosh & Company. The editor of the "Journal" however, questions these claims of priority, adding:

On the other hand we have evidence, upon which we based our statement, that the invention was claimed in an altogether different quarter. This point, although small, is interesting, and we shall be glad if any old-time mill managers, or machine makers will give us their views upon it.

In this connection the following remarks, taken from a letter dated October 30, 1917, written to THE INDIA RUBBER WORLD by the late William Kiel, indicate that he designed and introduced the tubing machine for rubber working:

I am pleased to furnish the information that when I was first engaged in the establishment of the Rubber Comb & Jewelry

Co.'s factory¹ in 1876, I had a rod and tubing machine constructed according to my own idea, which machine and duplicates thereof have been in use ever since. Indeed there were many improvements made by machine builders since that date, though the principle of the machine has never changed very materially, but if the Macintosh people had no machine up to 1876, the Rubber Comb & Jewelry Company antedated them by two years.



THE ORIGINAL KIEL TUBING MACHINE.

We are indebted to Mr. W. Weiting, vice-president of the American Hard Rubber Company, for the accompanying illustration of the machine referred to by Mr. Kiel and the information that it is still in use.

¹ Located in West Burlington, now Butler, New Jersey. This company was combined with others to form the present American Hard Rubber Co. of which for many years William Kiel was the general superintendent.

UNITED STATES RUBBER CO.'S SCHOOL FOR FOOTWEAR FACTORY EXECUTIVES.

Last spring the United States Rubber Co. inaugurated a school in which to train men selected from its several foot-wear factories for executive positions, this training to comprise, in the main, time study and job analysis. Necessary to success in this field was the use of the slide rule and the intelligent reading of books on the principles of scientific management, and industrial organization.

This class started in New Haven and was shortly moved to Williamsport, Pennsylvania, taking its quarters in the planning department of the Locomotive Rubber Co. In all, about twenty-five students have been sent to the school. Of this number the following will complete the course by Christmas and be returned to their respective factories: G. C. Bauer, Shoe Hardware Co., Waterbury, Connecticut; J. F. Curran, Naugatuck Glove Co., Naugatuck, Connecticut; G. L. Drown, National India Rubber Co., Bristol, Rhode Island; E. J. Artesian, National India Rubber Co., Bristol, Rhode Island; R. J. Ford, Woonsocket Rubber Co., Woonsocket, Rhode Island; H. E. Chittingworth, Candee Rubber Co., New Haven, Connecticut; F. P. Goodwin, American Rubber Co., Cambridge, Massachusetts; C. J. Lahr, Wool Boot Rubber Co., Hastings, Michigan; N. A. E. Nelson, Goodyear Metallic Rubber Shoe Co., Naugatuck, Connecticut; W. C. Robinson, Candee Rubber Co., New Haven, Connecticut; H. A. Curtis, Locomotive Rubber Co., Williamsport, Pennsylvania; R. W. McGregor, United States Rubber Co., New York City.

Beginning January 1 the school will be moved to New Haven, Connecticut, to occupy new quarters now being prepared in offices of the Candee Rubber Co.

Vulcanization Control.

THE interest of every practical rubber worker centers in the process of vulcanization because it is the basic operation on which the value of his output depends. Vulcanization, or the chemical union of sulphur and rubber as made known by Goodyear, Hancock and Parkes in the last century, came under scientific control only within recent years.

The work of the heater-man in charge of the operation of the vulcanizer formerly constituted a very imperfect means of control. The human operator cannot be relied upon, no matter how skilled and conscientious, just because he is human. He forgets, becomes fatigued, has his attention distracted and makes mistakes. It is unnecessary to emphasize the importance of exact control of any manufacturing process, because it is, in fact, axiomatic. Without control uniformity of product is impossible.

IMPORTANCE OF UNIFORM TEMPERATURE AND DRY STEAM.

Mention may be made of certain points which emphasize the value of vulcanization control in eliminating defective product. The effect of too long continuation of the heat of vulcanization is "overcured" or "burned" product resulting in such defects as excess hardness, lack of elasticity and rapid deterioration with age. Too short continuation of the cure leaves the goods "uncured," soft, tacky, or porous, and practically without elastic effect.

Curing in wet steam is undesirable because it results in uneven distribution of heat in the goods, hence irregularity of cure and tendency to undercure. Dry steam circulation in the heater and constant elimination of condensation are essential to uniform heat distribution, either in a boiler or press cure vulcanization.

THE NECESSITY OF GRADUAL INCREASE IN TEMPERATURE.

It is always desirable in vulcanizing rubber goods in large masses, as, for example, thousands of feet of hose on poles or solid tires in molds, to raise the heat gradually over a given period to allow for heating the hose poles or molds to the point where they will not cause loss of heat by condensation, and thus allow the rubber to attain the vulcanizing temperature of the steam. Sometimes this result is obtained by raising the temperature of the heater gradually and sometimes by raising it in a series of steps. The object is to ensure the application of the vulcanization temperature to the goods for a prescribed length of time.

Having determined a suitable plan of conducting the heat progressively, these conditions may be positively reproduced at will by mechanical means. By hand-regulation the rise of heat from stage to stage lacks uniformity and the vulcanizing temperature never remains constant, but fluctuates seriously.

These irregularities have a marked influence on the perfection and uniformity of cure and frequently are the cause of perplexing freak conditions very baffling to eliminate.

AUTOMATIC CONTROL OF VULCANIZATION.

The introduction of automatic control of time, temperature and exhaust has made possible perfect vulcanization, a condition vitally essential to a guaranteed product. The development of automatic control of vulcanization has been perfected and extensively adopted in American practice. The system necessitates special instruments and system of piping, but is not subject to disarrangement and is positive and reliable in operation.

STEAM CONTROL.

The principle on which steam control is regulated is the transmission and multiplication of the motion of a capsular spring which expands and contracts with changes in temperature and

consequent change in steam pressure. A ball valve is thus operated, which allows more or less air pressure to open or close a diaphragm-motor steam valve to a greater or less extent. Compressed air affords an instant, flexible and effective means for doing any amount of work required, especially when the steam temperature shows only a slight tendency to change, and when, therefore, the capsular spring moves only an infinitesimal extent.

For the operation of a tire-vulcanizing press a compound controller is frequently used. One of these controllers maintains a uniform steam temperature within the press, while the other takes care of the exhaust at the bottom of the press by periodically relieving the heater of the water of condensation and the super-saturated steam. An automatic time control instrument is set to regulate progressive increase of temperature and the duration of the cure, at which point it promptly shuts off the steam supply and opens the exhaust. It can also be arranged to turn on cold water for flooding and cooling the contents of the vulcanizer.

CHARTING THE CURE.

In the system of vulcanization control is usually included a recording thermometer which produces on a chart a graphic record of just what the controllers have accomplished in maintaining uniform temperature and time and serves as a permanent record. Examination of the charted records shows the perfect exactness with which it is possible to control the time and heat of the vulcanizing operation.

OPPORTUNITIES FOR SOUTH AMERICAN TRADE.

John B. Maus, export manager of The Fisk Rubber Co., Chicopee Falls, Massachusetts, whose portrait appeared in our issue of September 1, 1918, has just returned from a 15,000-mile trip through South America. On the evening of December 17, 1918, he addressed the Chamber of Commerce, Springfield, Massachusetts, on the various aspects of trade in the future with South America. About 100 were present at the meeting.

Mr. Maus emphasized the following needs for successful commercial relations with our sister republics: concentration on the South American market; learning to know the South American people; adequate knowledge of the Spanish language; comprehensive knowledge of geography and familiarity with the financial and business relations of the world; the sending of trained men to South America to study credits and competition; the arrangement by our banks to extend loans to South Americans and establish branches in their country.

Incidentally, Mr. Maus cited the fact that in 1913 British ships cleared the Argentine with 1,843,328 tons of merchandise, while ships flying the American flag cleared only 27,190 tons. He advocated a great merchant marine composed of fast vessels manned by crews under merchantmen's pay, to be picked from our Navy.

THE RUBBER MARKET AT SINGAPORE.

There seems to be considerable doubt as to the effect on the price of rubber by the present weekly Singapore auction sales, which last two days. On the other four days there are private sales between parties meeting in each other's offices. There seems to be a general feeling in favor of the establishment of a rubber exchange, in which sellers could exhibit their samples, and where buyers and sellers could meet for about two hours every morning. The exchange would, at first, only supplement the weekly auctions.

The Vulcanization of Rubber at Constant Temperature and by a Series of Increasing Temperatures.¹

By G. D. Kratz and Arthur H. Flower.

SLIGHTLY CONDENSED, this paper is given as prepared by the authors.

When vulcanization of rubber is effected by heating for a period of time at a definite and constant temperature, the rate of combination of the sulphur with the rubber decreases with the time. In this particular instance we have endeavored to maintain a constant rate of combination of the sulphur and rubber by a variation in the temperature. Our efforts have been confined primarily to devising a method for calculating a series of temperatures by the use of which the rate of vulcanization might be accurately controlled and to make a comparison of the physical characteristics of a rubber mixture vulcanized to the same point by both methods.

The vulcanization of rubber at constant temperature was regarded by Weber² as consisting in a chemical reaction between the rubber and sulphur. Later, Skellon³ also recorded results which tend to show that the combination of sulphur with rubber is strictly a chemical reaction, which is first preceded by the melting of sulphur and its solution in the rubber. Likewise he maintains that the rate of combination for unit time and constant temperature decreases with the decrease in the active mass of the sulphur present. Ostwald,⁴ on the contrary, has regarded the vulcanization phenomena as due to an adsorption of the sulphur by the rubber, the rate of which, when expressed graphically, follows the typical adsorption isotherm. Spence⁵ and his co-workers, however, have demonstrated that Weber's vulcanization curves, on which Ostwald based his calculations, are subject to correction. They⁶ have also shown almost conclusively that the vulcanization phenomenon is the resultant both of an adsorption and a chemical interaction of the sulphur with the rubber, so that the views of others are probably not entirely free from need of modification.

From the results obtained by Spence it is quite obvious that when vulcanization is effected at constant temperature, the major portion of the sulphur combined with the rubber during the early stages of the reaction. Lowering of the initial temperature and subsequently increasing it at regular intervals tends to make the reaction proceed more uniformly.

In fact, for many years it has been common technical practice to employ this method, popularly known as a "rising cure," based mainly upon the fact that it affords a means whereby the low heat conductivity of the rubber may be minimized rather than for the above reason. It is well established that in the case of bulky articles, unless the vulcanizing temperature is exceedingly low, or unless it is initially low and gradually increased as the reaction proceeds, the outside surface may be over-vulcanized before the heat has thoroughly penetrated to the interior of the mass.

There is a distinct and readily measurable relationship between the time required for vulcanization and the temperature at which it is effected, although there is hardly sufficient evidence to warrant its expression as a law. Based on our previous observations we have been able to calculate with accuracy the relative rates of vulcanization for various temperatures and to

apply these different temperatures so that the vulcanization-time curve did actually take the form of a straight line. The satisfactory results obtained were remarkable in that the degree of vulcanization was measured not by chemical but by physical means, which is shown later to be a dangerous procedure.⁷

In the application of the above, however, although the accuracy of our calculations and the control obtained over the rate of combination of the sulphur with the rubber exceeded our expectations, the differences noted in the physical characteristics of a mixture vulcanized by the two methods were not widely different until a sulphur coefficient of 3.9 was obtained. At this point, vulcanization at constant temperature resulted in a product which was noticeably inferior to the same mixture when vulcanized by a series of increasing temperatures.

This was not entirely unexpected, as, in the case of a mixture containing 5 per cent of sulphur, vulcanized to the point of "technical cure" with a sulphur coefficient of 1.69, the vulcanization-time curve at constant temperature so closely approximated a straight line that, for all practical purposes, a unit amount of sulphur may be said to have combined in unit time by either method. In fact, the same statement may be made with reservation even up to a vulcanization coefficient of 2.9, although at this point both the tensile strength and elongation, particularly the latter, of the mixture vulcanized at constant temperature were found to be slightly inferior to those obtained when vulcanization was effected by a series of increasing temperatures.

Thus, our results would tend to show that the values for the sulphur coefficient, as previously given by others, are in all cases high. Even the figures 2.8 to 3.0, recommended by Spence, appear to be excessive, while the values established by Eaton and Day are entirely out of question. Furthermore, it seems evident, that, as has previously been stated by De Vries, changes in the rubber-sulphur mixture which determine the physical properties of the mixture, proceed independently of those which determine the vulcanization coefficient. Or in other words, the past history of the sample must be known if it is to be judged solely on the basis of its sulphur content.

Likewise, whatever figure may be decided upon as the correct vulcanization coefficient for *Hevea* rubber, it is essential in order to obtain maximum physical results by vulcanization at constant temperature, that restrictions be placed upon the minimum amount of sulphur and catalyst allowable in the original mixture. For best results at constant temperature there should be present in the mixture such quantities of both sulphur and catalyst that the active mass of the sulphur is not decreased to an extent that will slow up the rate of reaction before the desired sulphur content is attained. If this is not taken into consideration the continued heating necessary to effect the com-

¹This work is now being repeated, the rate of vulcanization being measured by both chemical and physical means.

²The term "technical cure" is used to indicate that degree of vulcanization at which are found coincident maximum tensile strength and maximum elongation. This is not necessarily dependent upon the vulcanization coefficient, although a certain relationship does appear to exist between them. "Technical cure" is thus used in contradistinction to "optimum cure," as it has been our experience that what is generally known as "optimum cure" is, in most instances, far practical purposes an over-cure and that the previously established values for the correct vulcanization coefficient are for the most part high. Certainly it should not be in excess of 2.8 or cut for *Hevea* rubber. In connection with other work we have also determined the vulcanization coefficient of certain rubbers other than *Hevea*. These results show that although the coefficients for these rubbers are not necessarily comparable as determined by Spence and Eaton, they should not be in excess of the following figures: *Plantation Hevea*, 2.8; *Fine Hard Para*, 3.2; *Red Kasai*, 3.4; and *Ceara* (Manihot), 4.4. Samples of these rubbers with high coefficients were found to age quickly with rapid deterioration.

¹Presented before the Rubber Section at the 56th meeting of the American Chemical Society, Cleveland, September 10 to 13, 1918.

²"Chemistry of India Rubber," 1906 edition, pp. 85-88.

³"India Rubber Journal," 46 (1913), 723; "Rubber Industry," 1914.

⁴"Kolloid-Zeitschrift," 6 (1910), 136.

⁵"Kolloid-Zeitschrift," 11 (1912), 28; "Chemiker-Zeitung," 36 (1912), 1162; "Kolloid-Zeitschrift," 11 (1912), 274.

⁶*Ibid.*, 8 (1911), 304; 11 (1912), 28; 13 (1913), 265.

bination of the latter fractions of the sulphur undoubtedly impairs the quality of the final product.

Under certain conditions we have found it possible to obtain a uniform rate of vulcanization for a rubber-sulphur mixture by employing a previously calculated series of increasing temperatures such that the vulcanization-time curve is reduced to a straight line.

By so doing we have shown that at comparatively high sulphur coefficients a better product is obtained by vulcanization with a series of increasing temperatures than with a constant temperature. We have also found the vulcanization coefficients previously recommended by others to be excessive, and that, unless the history of the vulcanization phenomenon is fully known, it is unsafe to judge samples solely on the basis of their sulphur content.

The mixture used by the authors in their experiments consisted of the following proportions by weight:

First latex plantation cure	100
Zinc oxide	100
Sulphur	5
Basic amine	0.33

The rubber used was the best quality typical of its variety and was subjected to the minimum amount of milling necessary to work in all of the ingredients. The basic amine (catalyst) was ground to 200-mesh and was worked into the rubber before the pigment and sulphur were added.

An investigation was made of the rate of vulcanization of this mixture at a constant temperature of 298 degrees F. Our results, which confirm those previously obtained by others, are tabulated in Table I and are expressed graphically in Figure 1. By this table and figure it is also shown that although 60 per cent of the sulphur present in the mixture combined with the rubber during the first two hours, less than 80 per cent had entered into combination at the end of 4 hours.

TABLE I. VULCANIZATION AT A CONSTANT TEMPERATURE OF 298 DEGREES F.

Time of Vulcanization, Min.	Combined Sulphur, Per cent.	Tensile Strength, Lbs. per Sq. In.	Elongation, Per cent.	Permanent Set, Per cent.
10	0.404	.....	.....	.....
15	0.578	.....	.....	.....
20	0.663	.....	.....	.....
25	0.840	.....	.....	.....
30	1.087	1527	18.3	17.2
40	1.330	1533	710	14.06
50	1.490	1930	707	15.23
60	1.690	2277	697	15.62
70	1.875	2015	685	17.97
80	2.170	2102	690	20.30
90	2.485	2035	680	21.09
120	3.410	2156	678	24.22
150	3.600	2060	685	25.78
180	3.600	1725	677	23.44
210	3.780	1558	680	23.44
240	3.920	1435	652	18.75

It is seen in Table I that the "technical cure" for this mixture is obtained in about 60 minutes at 298 degrees F. with a vulcanization coefficient of 1.69. Further, while the general

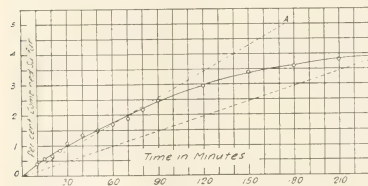


FIGURE 1.—VULCANIZATION-TIME CURVE AT CONSTANT TEMPERATURES.

shape of the curve in Figure 1 was found to be convex to the x-axis, that portion up to and including this 60-minute point very closely approximates the straight line OA drawn through this point. Thus in the case of this particular mixture "technical

vulcanization" is attained before the active mass of the sulphur present is decreased to an extent which would produce a marked decrease in the rate of vulcanization.

It has been shown above that at a coefficient of 1.69 our method was not applicable for the differentiation of the small variations in the quality of the mixture, due to the method of vulcanization employed. For this reason a comparison was made of the physical characteristics of the mixture when vulcanized to a coefficient of 3.9 at constant temperature and by a series of increasing temperatures.

The temperatures and times to be employed to effect vulcanization by the latter method may be readily obtained by applying the data given in Table I and Figures 1 and 1a. First, the number of different temperatures to be used should be previously decided upon. Second, the number of minutes required to effect a "technical cure" at each of these temperatures may be obtained from Figure 1a. Then, treating each temperature in the series individually, let

t = time in minutes required to effect a "technical cure" at that temperature. (From Figure 1a.)

t' = time in minutes required to effect a "technical cure" at 298 degrees F. (From Table I.)

c = time in minutes required to attain the desired vulcanization coefficient at 298 degrees F. (From Table I.)

n = number of temperatures in the series.

Then, $\frac{c}{n} = T$, where T equals the number of minutes required for vulcanization at a given temperature when employed in the previously established series.

It is quite obvious that, if temperatures are chosen at random from the figure, the sum of the times for the complete series of temperatures may not be the same as the time required to effect the desired degree of vulcanization at a constant temperature of 298 degrees F. On the other hand, it is easily possible to make a selection such that the total time of vulcanization is the same by either method. In order that our results might be strictly comparable, we chose the following series of four temperatures, the sum of the times of which was exactly equal to 240 minutes, the time required to obtain a coefficient of 3.9 at 298 degrees F.

285.5 degrees F. for.....	107 minutes
298.0 degrees F. for.....	60 minutes
302.5 degrees F. for.....	43 minutes
307.0 degrees F. for.....	30 minutes
Total	240 minutes

Employing the foregoing series of temperatures and times, the mixture was vulcanized in a button mold for a total time of 240 minutes, samples being removed for combined sulphur estimation at hourly intervals and at each change in the vulcanizing temperature. These results are shown in the first four columns of Table II and expressed graphically by the solid line in Figure 2. It is readily observed that the results obtained coincide al-

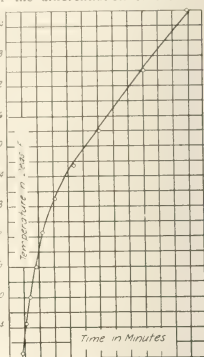


FIGURE 1a.—TEMPERATURE-TIME CURVE FOR VULCANIZATION TO TECHNICAL CURE.

most exactly with the hypothetical straight vulcanization-time curve represented by the dotted line O B in Figures 1 and 2.

Separate slab cures were then made for physical tests, at the temperatures and times required to produce vulcanization co-

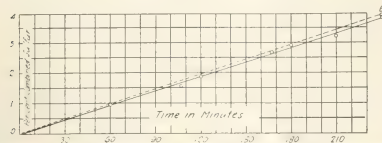


FIGURE 2.—VULCANIZATION-TIME CURVE FOR INCREASING TEMPERATURES.

efficients of 1.56, 2.96, and 3.86. The results of these tests are shown in the last three columns of Table II.

TABLE II. VULCANIZATION BY A SERIES OF INCREASING TEMPERATURES.

Total Time of Vulcanization, Min.	Difference in Temperature, Min. Deg. F.	Combined Sulphur, Percent.	Tensile Strength, Lbs. per Sq. In.	Elongation, Per cent.	Permanent Set, Per cent.
60	60	285.5	0.937	.....	.....
107	107	285.5	1.567	2168	715
107	107	285.5	.....	.....	17.97
1:00	13	298.0	1.878	.....	.....
107	107	285.5	.....	.....	.....
1:07	60	298.0	2.702	.....	.....
107	107	285.5	.....	.....	.....
1:50	60	298.0	2.963	2934	714
107	107	298.0	.....	.....	25.52
1:57	13	302.5	.....	.....	.....
107	107	285.5	.....	.....	.....
2:10	60	298.0	3.252	.....	.....
107	107	298.0	.....	.....	.....
2:40	43	302.5	.....	.....	.....
107	107	285.5	.....	.....	.....
3:00	60	298.0	3.862	1944	705
107	107	302.5	.....	.....	25.00
3:07	30	307.0	.....	.....	.....

To facilitate comparison, the results of these physical tests, together with those obtained at the same sulphur coefficient when vulcanization was effected at a constant temperature of 298 degrees F., have been grouped together in Table III. From this table it is seen that there is very little difference in the tensile strength of the mixture at coefficients of 1.69 or 2.94 when vulcanized by either method. But in both instances, a series of increasing temperatures appears to produce a product of superior elongation. When the coefficient is increased to 3.9, however, it is seen that the product obtained by employing a series of increasing temperatures is markedly superior to that obtained at constant temperature, both as to tensile strength and percentage of elongation.

TABLE III.

Combined Sulphur.		Tensile Strength.		Elongation	
Constant	Increasing	Constant	Increasing	Constant	Increasing
Temp.	Temp.	Temp.	Temp.	Temp.	Temp.
1.699	1.567	2277	2168	697	715
2.945	2.963	2156	2234	678	714
3.920	3.860	1435	1944	652	705

It is recognized that the results which have been recorded herein are not subject to indiscriminate or general application.

This work has been confined to the investigation of one rubber-sulphur mixture only, and our calculations have been based on the correct or "technical cure" of the mixture as being obtained after vulcanization for 60 minutes at 298 degrees F. However, as the comparisons made are relative, and as the principle involved will apply to other mixtures and other vulcanization coefficients, we are warranted in drawing the following conclusions:

1.—That it is possible to calculate and apply a series of increasing temperatures such that the vulcanization-time curve for any rubber-sulphur mixture may be made a straight line, the slope of which is dependent on the temperatures employed and the amount of catalyst present.

2.—That in vulcanization at a constant temperature, in order to procure maximum physical properties, sulphur must be present in the mixture in such an amount that its active mass is not decreased to an extent which will appreciably slow up the rate of reaction before the desired vulcanization coefficient is attained.

3.—That for rubber-sulphur mixtures containing 5 per cent or less of total sulphur, the physical properties of the mixture, when vulcanized by a series of increasing temperatures, are superior to those obtained by vulcanization at constant temperature; this is particularly true at vulcanization coefficients of 2.8 or above.

4.—That the vulcanization coefficient for Hevea rubber is probably between 1.7 and 2.8.

5.—That it is dangerous to evaluate samples of vulcanized rubber solely on the basis of their vulcanization coefficients.

AIR BRAKES FOR MOTOR TRUCKS AND TRAILERS.

The use of motor-truck trailers has been limited to light loads and fairly level roads, due to the impossibility of controlling heavily loaded trailers with ordinary brakes. With the application of specially designed air-brake equipment this difficulty disappears and the motor truck and trailer become successful factors in the transportation of interurban freight. This opens a new field of business for the manufacturers of air-brake hose and one that presents an assured future.

A two-ton truck and a five-ton trailer with a seven-ton load afforded an exceptional test in a recent trial run where 250



TRUCK AND TRAILER EQUIPPED WITH AIR-BRAKES.

miles of mountains were encountered with grades as stiff as 19 per cent, and four miles long. The fact that the train was held under control under all conditions without damaging the brake linings, speaks well for the brake equipment. For exceptionally severe service, as in construction work, the use of armored hose is contemplated.

With this equipment the use of pneumatic tires is more appealing to the truck owner, as there is always a reliable means of inflation at hand, and as the pneumatic tire gains prestige in the trucking field, air brakes should be the standard equipment on all trucks, whether a trailer is to be used or not. (The Parker Appliance Co., 2619 Vermont avenue, N. W., Cleveland, Ohio.)

NO RUBBER STANDARD AT SINGAPORE.

In Singapore there is no official rubber standard, and each person uses the description that he considers most apt. The Singapore unofficial standard of sheet, called "prime," is higher than the London official standard of sheet, called "f. a. q.," and rubber that would be thrown out in Singapore as not coming up to the level of "prime sheet," might often pass the London "f. a. q." standard. On the other hand, rubber with the marks of a well-known "crack" rubber estate might fetch a premium of a half-penny or so in London over the price for standard quality. That rubber would be "prime" in Singapore.

What the Rubber Chemists Are Doing.

INVESTIGATIONS OF THE VULCANIZATION PROCESS.¹

DR. A. W. VAN ROSSEM, Director of the Institute of the International Association for Rubber Cultivation in the Netherlands Indies, has compiled the Institute studies of the influence of various factors on the vulcanization process. The studies here reported were restricted to the treatment of hot vulcanization only. Following brief introductory remarks on the well-known objects and results of the vulcanization process, the influence of various important factors are considered. The results obtained are given below in condensed form.

INFLUENCE OF THE METHOD OF PLASTICIZING AND WASHING ON THE VULCANIZATION COEFFICIENT.

There is no doubt that very intense plasticizing can be carried out without having any influence on the velocity of vulcanizing, as appears from results expressed in terms of the vulcanization coefficient of a mixture of 92½ parts Hevea crepe and 7½ parts sulphur, cured according to the standard method. (THE INDIA RUBBER WORLD, September 1, 1918, page 723.)

INFLUENCE OF PLASTICIZING ON RELATIVE VISCOSITY AND VELOCITY OF VULCANIZATION.

Way of Plasticizing	Relative Viscosity 5% Solution in Benzine of Plas- ticized Mixture.	Vulcanization Coefficient.
Normal	177	2.25
10 times extra	123	2.29
30 times extra	85	2.28
60 times extra	63	2.28

The marked decrease of viscosity shown in the table is notable. This decrease takes place at a slower rate when the manipulation is carried out without rest. In this case the period of rest was short and had little influence. If the rubber is allowed to cool, as over night, it is much more affected when milled again. Probably on much longer plasticizing a greater decline of viscosity will take place.

Whereas, Weber², and Spence and Ward³ find that the velocity of vulcanization is independent of the duration of plasticizing, Axelrod⁴ finds that strongly plasticized rubber takes up more sulphur than the normally treated. No indication of this fact with very strongly plasticized rubbers was found at the Institute.

There is no doubt that on the washing rolls rubber is depolymerized in a way corresponding to that on the mixing rolls but also there may be removed by washing substances which affect the velocity of vulcanization. This has been proved with certainty by the Institute for Pará rubbers and also for special rubbers prepared according to evaporation processes.

TIME OF CURE AND THE VULCANIZATION COEFFICIENT.

It appears that the quantity of combined sulphur increases about in proportion to the duration of the vulcanizing time.

TEMPERATURE AND THE VULCANIZING COEFFICIENT.

From the tabulated results of three series of experiments on the same rubber and sulphur mixing it is deduced that the temperature coefficient for an interval of nine degrees C. is greater than two. With ten degrees difference of temperature the results diverge more, and with six degrees difference, have a greater tendency to similarity. Consequently it may be safely assumed that for temperatures not varying much from the technical ones, van't Hoff's rule will prevail, namely, that the temperature coefficient is between two and three. Whether this

holds for temperatures below 100 and above 160 degrees C. remains to be investigated.

ADDED SULPHUR AND THE VULCANIZATION COEFFICIENT.

This matter was studied on mixes of rubber and sulphur ranging from 2½ to 20 per cent of sulphur, vulcanized at 50 pounds of steam for 1½ hours. The results show that there is a direct relation between the coefficient of vulcanization and the sulphur present.

VISCOSITY OF RAW RUBBER AND THE COEFFICIENT OF VULCANIZATION.

There exists for first latex rubbers a close correlation between the viscosity of the raw product and the velocity of vulcanization. This correlation is striking because the rubber has been strongly depolymerized before devulcanization, even with the normal way of working. All first latex rubbers will probably be depolymerized on prolonged plasticizing to an identical degree of viscosity. In practice a highly viscous rubber will be less depolymerized before vulcanization than a less viscous one. The above-mentioned correlation, however, does not become less striking in consequence, for it has been seen above that the velocity of vulcanization is independent of the amount of plasticizing. It is very probable, in view of experimental results, that rubber low in viscosity vulcanizes much more slowly than highly viscous rubber.

In order to throw light on the influences which dominate the process of transforming pure raw rubber into the cured product the following points were investigated: (1) Is increase of breaking load attributable to less depolymerization of the rubber before vulcanization? (2) Is increase of breaking load due to the specific property of building up more quickly while being vulcanized in the case of a rubber of higher viscosity number?

Experimentally it was found that a test piece made from a brand of rubber whose solution shows a high viscosity number, becomes stronger than one made from a species which gives a less viscous solution, because the inherent properties of the first cause it to vulcanize with greater rapidity. Under normal circumstances such a test piece becomes still stronger, because the highly viscous rubber is far less depolymerized during the same amount of work exerted upon it by the mixing rolls than a rubber which is less viscous.

INFLUENCE OF THE PERCENTAGE OF RESIN, ASH, NITROGEN AND THE DEGREE OF ACIDITY ON THE VULCANIZATION COEFFICIENT.

Opinions are divided as to whether the presence of resin is an advantage to vulcanization of rubber or not. The work of the Institute, by Van Heurn, indicates, without restriction, that with standard vulcanization the influence of resin on the mechanical properties of rubber is to lower the breaking strength.

Later, on elaborating numerous data, Van Rossem found the peculiarity of first latex rubbers, that there exists a correlation between the percentage of resin and the velocity of vulcanization and that with the increase of the resin percentage, velocity increases on the average. Though the correlation coefficient has a comparatively low value, still there is a distinctly positive correlation between the percentage of resin and the vulcanization coefficient. That this correlation exists is especially remarkable because from Van Heurn's tests just mentioned, it appeared that the addition of rubber resins causes the breaking strength to decline and elongation at break to increase.

The way the resins can affect the mechanical properties of rubber was revealed by a study of elongation diagrams and led to the following conclusions:

1. By extracting the resin a change in mechanical properties

¹ Communications of the Netherlands Government Institute for advising the Rubber Trade and the Rubber Industry—Part VI.

² "The Chemistry of India Rubbers" 1902, page 16.

³ "Kolloid-Zeitschrift," 11, 1912, page 278.

⁴ "Gummi-Zeitung," 24, 1909, page 352.

takes place requiring more strain to produce the same elongation, because the rubber gains in stiffness.

2. After adding the extracted resin the original diagram of elongation is recovered except that the curve does not extend quite as far.

3. Addition of double the quantity of resin produces a greater elongation for the same stress, the rubber thus having become more "supple."

It should not be lost sight of that the contradiction between the above-mentioned positive correlation and the influence of resins may be apparent, no corresponding vulcanization coefficients having been determined. It is possible that the resins have an accelerating influence on the binding of sulphur, or they may cause a marked decline of the mechanical properties.

It should further be noted that by "percentage of resin" is denoted the acetone extract, and that these terms are not identical, as the acetone extract also contains non-resinous or nitrogenous compounds. Possibly some of the ingredients of this acetone extract have an accelerating effect and it may be because of this that the correlation between velocity of vulcanization and percentage of resin is not more distinct.

From the data for 214 samples of first latex crêpe Van Rossem found that there exists in general no correlation between the percentage of ash in the raw rubber and the velocity of vulcanization.

From 134 samples he determined that there exists no correlation between the nitrogen percentage of the raw rubber and the vulcanization coefficient.

In this respect Clayton Beadle and Stevens have shown that the insoluble part, rich in nitrogen, accelerates vulcanization, and Stevens found that different nitrogenous compounds, such as peptone and casein, act in the same way. These tests retain their value, but, according to the preceding, the more or less accelerating action of the so-called insoluble part may no longer be attributed to the nitrogen percentage. This does not mean that artificially added nitrogenous compounds may not act on the velocity of vulcanization, nor should it prevent other natural ingredients in the raw rubber from acting in a similar way.

No correlation exists between the degree of acidity of the rubber and the velocity of vulcanization. This is somewhat surprising, since acid acts to retard the velocity. In the meantime it should be remembered that the degree of acidity can be only incompletely determined.

FILLERS AND ACCELERATORS AND THE VULCANIZATION COEFFICIENT.

The addition of not too large quantities of inorganic fillers which are inactive in respect to sulphur, does not practically change the velocity of vulcanization.

Whether an inorganic or an organic material will act as an inert filler or as a catalyst in the vulcanization process is uncertain of prediction. The action of old ground rubber, reclaimed rubber and rubber substitutes is a study of great importance, but this for the present is prevented by a number of difficulties.

(To be continued.)

METHODS OF ANALYSIS.

DETERMINATION OF FREE CARBON IN RUBBER GOODS.

A. H. SMITH and S. W. Epstein, of the Bureau of Standards, read before the Rubber Section of the American Chemical Society at Cleveland, September 10 to 13, 1918, a paper on the determination of free carbon in rubber goods. Following is an abstract of their investigations and conclusions and their method of analysis in full:

The authors state that the main object in the determination of free carbon in rubber goods is to permit the determination of the rubber content by difference. The most widely used method for the determination of rubber is to calculate it as the difference between 100 per cent and the sum of ash, total sulphur, and various extracts. This method is subject to wide

error when free carbon is present and no allowance is made for it.

The nitric acid methods of Henry William Jones¹ and of W. A. Caspari² were not found entirely satisfactory. The authors have found that the action of nitric acid is to attack the carbon of lampblack and gas black and it is necessary to correct the analytic results as obtained by ignition loss to compensate for the error caused by the formation of compounds from the free carbon. The attack of amorphous carbon by nitric acid renders an accurate determination by this method impossible, but the error is sufficiently uniform and small to allow practical determinations.

DETAILS OF METHOD AS FINALLY ADOPTED.

Extract a one-gram sample for six hours with acetone and then for three hours with chloroform or carbon bisulphide. Transfer the sample to a 250 cc. beaker and heat on the steam bath until it no longer smells of chloroform. Add a few cc. of hot concentrated nitric acid and allow to stand in the cold for about 10 minutes. Add 50 cc. more of hot concentrated nitric acid, taking care to wash down the sides of the beaker. Heat on the steam bath for about one hour or until the disappearance of all bubbles or foam from the surface. Pour the liquid, while hot, into a Gooch crucible containing a fairly thick pad of ignited asbestos. Filter by applying gentle suction and wash well with hot concentrated nitric acid. Empty the filter flask, wash the filter alternately with acetone and benzol until the filtrate is colorless. Next wash it well with a hot 15 per cent solution of sodium hydroxide. Test for the presence of lead by running some warm ammonium acetate solution, containing an excess of ammonium hydroxide, through the pad into a solution of sodium chromate. If a yellow precipitate forms, the pad must be washed with the ammonium acetate solution until the washings no longer precipitate the sodium chromate solution. Next wash the residue well with warm five per cent hydrochloric acid solution. Remove the crucible from the funnel, taking care that the outside is clean, and dry it in an air bath for 1½ hours at 150 degrees C. Weigh, burn off the carbon at a dull red heat, and reweigh. The difference in weight represents approximately 105 per cent of the carbon originally present in the form of lampblack or gas black.

It is recommended that 0.5-gram samples be taken for compounds containing over ten per cent of free carbon and one-gram samples be taken for compounds containing less than this amount.

AUTHORS' REMARKS ON METHOD.

The factor of 105 per cent as a ratio between the ignition loss and the amount of carbon present was arrived at from the results of a large number of determinations made at the Bureau of Standards. Gas black determinations ran from 101 to 106 per cent and lampblack determinations from 100 to 108 per cent. Results were obtained on different samples containing large amounts of mineral rubber, lead (both in the form of oxide and sulphate), reclaimed rubber of various kinds, glue, substitute, sulphides of antimony, talc, etc. In all cases the results came between 101 and 108 per cent of the carbon originally present. By using the factor of 105 per cent, the maximum divergence is four per cent and the usual divergence very small.

In our analysis of the gas black and lampblack used in our experiments, we determined the volatile loss at 100 degrees C, the acetone extractable matter, and the ash, and assumed the remainder of our samples to be carbon. Our results have been calculated to this basis, and justify the method for routine laboratory use.

¹Fourth International Rubber Congress.

²India Rubber Laboratory, Bombay.

Replete with information for rubber manufacturers—Mr. Pearson's "Crude Rubber and Compounding Ingredients."

CHEMICAL PATENTS. THE UNITED STATES.

LIQUID COATING COMPOSITION.—A liquid coating composition comprising linseed oil, rosin, gutta percha, gum arabic, shellac and gasoline in prescribed proportions. (Frank Picard, Fall River, Mass. United States patent No. 1,281,650.)

CATALYST.—As a new catalyst for hardening oils, finely divided poreless native amorphous silica of the character of that occurring in asbestos deposits, such silica being of a fineness as high as 400-mesh and carrying reduced nickel. (Alexander Schwarzen, assignor to Kellogg Products, Inc., both of Buffalo, N. Y. United States patent No. 1,282,297.)

RUBBER COMPOSITIONS AND METHODS.—Vulcanized compositions and products of light color, which comprises incorporating with a vulcanizable ingredient of the composition to be vulcanized, a light-colored semi-solid to solid bitumen, obtainable by the destructive distillation of coal-tar pitch, and subjecting the composition to vulcanization. (John M. Weiss, assignor to The Barrett Co., both of New York City. United States patent No. 1,282,505.)

GERMANY.

REGENERATING OF VULCANIZED RUBBER.—The regeneration of soft vulcanized rubber is effected as follows: Vulcanized rubber is heated to a high temperature; without melting, in a vacuum or in an inert gas, and the harmful effect of the air on heated rubber is avoided by rapid cooling; for example, by treatment with cold water, or solutions of sodium carbonate or alkali. (B. J. F. Vanhorst, The Hague, and J. G. Fol, Delft, Netherlands Indies. German patent No. 302,995, March 19, 1914.)

THE DOMINION OF CANADA.

PROCESS OF MAKING RUBBER SPONGES.—A process for producing an antimony-colored rubber sponge of low specific gravity comprising a batch of material including chiefly rubber, to which is added a softening agent, sulphuretted antimony, a rubber substitute and a softening medium containing a blowing agent acting late in the period of vulcanization, and a softening medium acting when cold to stiffen the mass and having substantially no retarding effect upon the reformation of the mass during vulcanization. With this mass is mixed a body-forming medium of low specific gravity, the main blowing agent and an ingredient for retarding the blowing action in the first stages of vulcanization. This mixing is worked until it reaches the consistency of soft putty and after aging is formed into the desired shape and vulcanized. The cured article is mechanically compressed to break its unbroken cell walls, and finished by trimming off the skin, exposing the porous body. (The Miller Rubber Co., assignee of Richard Griffith and Charles F. Flemming—all of Akron, Ohio, U. S. A. Canadian patent No. 186,291.)

THE UNITED KINGDOM.

LEATHER SUBSTITUTES.—A coarse felt impregnated and covered with a mixture of leather powder, vulcanized rubber powder, and free sulphur heated to a semi-liquid state, with which may be incorporated rosin, sodium silicate, and coloring matter. After mixture and heating, the material is forced in semi-liquid condition into the open pores and coated on the surface of coarse felt and cooled until solid. (J. Ward, 31 Gratton Road, Queen's Park, Bedford, England. British patent No. 119,304.)

TIRE PUNCTURE COMPOSITION.—A composition for sealing pneumatic tires, etc., consisting of the following ingredients, the preferred proportions being as stated, namely: water, two quarts; granulated cork, four ounces; powdered cork, two ounces; talc, one pound; white lead, eight ounces, and gum arabic, two ounces. (W. P. Thompson, 6 Lord street, Liverpool, England. [Puncture Cure, Limited, 19 Union Bank Building, Calgary, Canada.] British patent No. 119,324.)

LABORATORY APPARATUS. BURETTE-CALIBRATING PIPETTE.

A SELF-CALIBRATING BURETTE-PIPETTE has been perfected by C. W. Fouk, of the Department of Chemistry, Ohio State University, Columbus, Ohio, and interestingly described by him in a reprint from an article originally published in the "Journal of Industrial and Engineering Chemistry,"

August, 1915, page 689. The illustration shows the pipette attached to the outlet of a burette to be calibrated. All previously described burettes of this sort have had a mark on the lower stem which served as a zero point. In the present instance it is evident, as the accompanying figure will illustrate, that if the pipette has previously filled and emptied, the flow will begin at the top of the boring through the plug of the cock at A. Thus the point A is a zero mark to which the adjustment of liquid is automatically regulated by the position of the cock. This zero point is more accurate than a mark around the lower stem would be on account of the boring. (The Kauffman-Lattimer Company, Columbus, Ohio.)



BURETTE-CALIBRATING
PIPETTE.

A NEW COMBUSTION BULB.

A very convenient and easily cleaned combustion bulb is here shown. It is extremely simple in construction and has no stop-cocks to work loose and leak, or stick tight and cause breakage by attempted removal. It weighs about 125 grams when fully charged and has a demonstrated capacity of absorbing up to four grams of carbon dioxide without loss when the gas current is flowing at the rate of 500 c.c. per minute. (The Kauffman-Lattimer Co., Columbus, Ohio.)

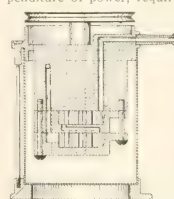


COMBUSTION
BULB.

HIGH VACUUM PUMP.

The most recent development in high vacuum pumps for laboratory and commercial purposes is represented by the Cenco-Nelson pumps. They are compact, operate with very small expenditure of power, require no attention when in operation and

last indefinitely. They measure about seven inches high by five inches in diameter at the base and weigh about ten pounds. The two-stage pump contains two pairs of gears, arranged one above the other. The upper pair takes the air from the inlet tube and delivers it out through the exhaust. The three-stage contains three pairs of gears similarly arranged and produces a higher vacuum. To offset the heating effect in operation a water circulation system is provided. (Central Scientific Co., 460 East Ohio street, Chicago, Illinois.)



HIGH VACUUM PUMP.

BARIO.

Bario metal is a successful substitute for platinum for laboratory crucibles and other utensils. Bario is a brilliant grayish-white, non-magnetic metal, melting at 3100 degrees F. and upwards, according to grade. It is not attacked by nitric, sulphuric, hydrochloric, hydrofluoric, acetic or oxalic acids, nor by alkalis, sea water, ammonia, iodine, etc. (The Bario Metal Corp., 167 West 18th street, New York City.)

New Machinery and Appliances.

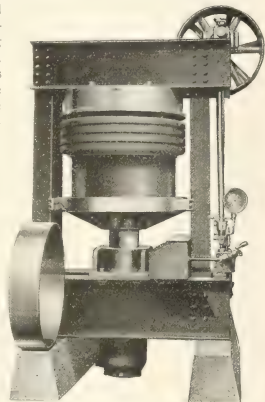
THE W-S-M HYDRAULIC SOLID-TIRE PRESS.

A NECESSARY part of the equipment of truck service stations and garages is a solid-tire applying press. Speed, simplicity and strength should be the prominent characteristics of this machine that must be always ready and efficient and require but little mechanical knowledge in the operation of mounting and demounting tires.

Such specifications are embodied in the press shown in the accompanying illustration. It operates by hydraulic pressure and is built in two sizes with 150 and 200-ton pressure ratings. The frame construction and strength of the fittings are amply able to take care of the occasional serious overloads that are demanded in service.

To mount a tire the ram is lowered, the wheel is placed on lower platen, with the tire in position above it. The belt is thrown onto tight pulley, and the control valve closed.

To demount the tire a ring is placed on the lower platen, just large enough to clear wheel, which is placed upon it. A second ring, or a set of blocks as is sometimes used, is placed on the circumference of tire. The control valve is then closed, and the tire pressed down off of wheel. (The Wellman-Seaver-Morgan Co., Akron, Ohio.)



Mounting Tire—Beginning of Stroke.

TWO-DIP SPREADER FOR CORD FABRIC.

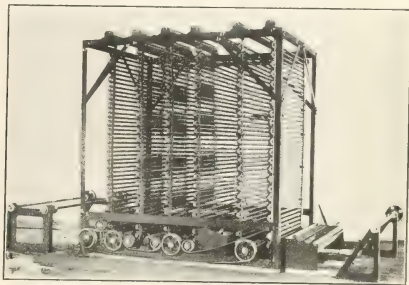
This machine is particularly designed for coating cord fabric, providing two coats with a short drying operation between the two immersions and a somewhat longer and more thorough process after the second coat.

The let-off for handling the fabric is carried on a separate stand on the feed end of the machine, delivering the fabric to the machine under a light tension. The fabric passes through the first tank and receives a heavy coat of cement, the excess being removed by a scraper bar, and the pressure being regulated by a spring. The fabric is then carried over two vertical steam-coils and partially dried before being delivered to the second tank, at which point it is given an additional coat. It is then thoroughly dried over a bank of four vertical steam-coils and delivered to an external wind-up stand which also carries a friction let-off for the liner.

The fabric in passing through the machine is driven by six rolls carried on the bottom framework on plain bearings and driven by an endless belt. Idler rolls are provided over each drying section and are mounted on ball bearings, the first four rolls being of the spreader type, insuring a smooth finish.

Drying coils, tanks, driving and idler rolls are all mounted on an angle-iron frame which is rigidly braced and supported.

This framework is enclosed except for a short distance above the floor line by a sheet-metal cover, the driving side of which consists of removable doors. The side section includes a con-



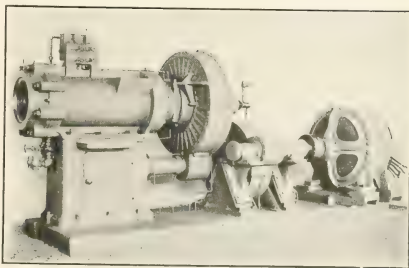
A CORD-FABRIC SPREADER AND DRIER.

nection for an exhaust fan to assist in removing the vapor.

Due to the inflammable nature of the cement and vapors, it is usual to provide a separate building isolated from the main plant. For this reason the machine has been designed for countershaft drive so that the cement churns and exhaust fan may be driven from the same motor. (The Turner, Vaughn & Taylor Co., Cuyahoga Falls, Ohio.)

THE LARGEST TUBING MACHINE.

Tubing machines are invaluable in making a great variety of rubber products that range from the smallest rod to the largest solid tire. That the mechanical development of these machines has kept pace with the manufacturing demands is shown by the accompanying illustration of the largest tubing machine. It is interesting to compare this 1918 product with the



THE ROYLE PERFECTED TUBING MACHINE

original Kiel tubing machine, built in 1876, and shown elsewhere in this issue.

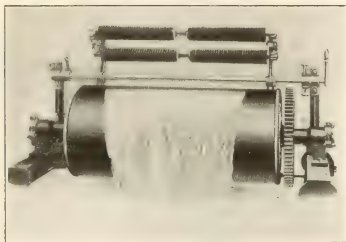
The Royle perfected tubing machine was built for making solid tires and has a cylinder bore of 9 inches. The die limits are 3 to 6 inches. Extra large dies of 8 3/4 inches may be used. The machine weighs 18,000 pounds and occupies a floor space

of 48 by 158 inches. It is driven by a 100-horse-power motor and reduction gear. (John Royle & Sons, Paterson New Jersey.)

THE BRUSH CLOTH STRETCHER.

Many kinds of fabrics are used in making certain rubber products, and require special treatment before and after calendaring or proofing, that of stretching being quite important. For this purpose the brush cloth-stretcher here pictured is recommended, as it smooths out the cloth and improves the finish of the goods. It is used to advantage on balloon cloth during the process of coating, and works equally well for stretching and removing wrinkles from tire-building fabric, breaker fabric, sheetings, drills and stockinet. Rubberized materials or tacky goods can be smoothed and stretched on this machine, without damage to finish, during the process of spreading.

The principle of stretching cloth from the center toward the selvage with this device is said to differ from that of any other employed for a similar purpose. The bristled rolls are made up of disk units, into which the bristles are set at an angle.



BRUSH STRETCHER THROWN OFF DRUM OR CALENDER ROLL.

These disks are assembled and firmly locked upon a shaft, so that the bristles point outward from the center of the shaft. The mounted shafts are hung upon a frame designed to allow the application of the bristled rolls to the drying cylinders or calender rolls or other surface, at any desired pressure, which is regulated according to the nature of the fabric to be stretched and the amount of stretch desired. An important feature of this stretcher is that it does not require to be threaded-up. The cloth is run on the calender roll or drum in the usual way, and the stretcher rolls are brought in contact with the goods. They may be quickly removed by a simple adjustment device. The stretcher rolls are not mechanically driven, but revolve when brought in contact with the moving surface of the goods. Each bristle catches a different thread of the fabric at the same time, which has the effect of pushing the cloth outward from the center toward the selvage without any undue strain, as the action of the multitude of bristles working in unison is absolutely uniform, and the perfect flexibility of the bristles eliminates all possibility of disturbing the finish of the goods in any way. (Sidney Birch Co., Inc., Mansfield, Massachusetts.)

PROCESS PATENTS.

- N. O. 1,281,374. Balloon manufacture and varnishing. H. E. Honeywell, St. Louis, Mo.
 1,282,160. Sealing ends of rubber hose. J. W. Young, assignor to The Goodyear Tire & Rubber Co., both of Akron, O.
 1,282,259. Electrolytic process for producing metal-surfaced articles, such as rubber-shoe lasts. M. M. Merritt, Danvers, assignor to Copper Products Co., Boston, both in Massachusetts.
 1,282,460. Applying finish coating to surfaces. C. H. Parkin, Cleveland, O.
 1,282,767. Preparation of tread and sidewall stocks for tires. B. Darrow, assignor to The Goodyear Tire & Rubber Co., both of Akron, O.

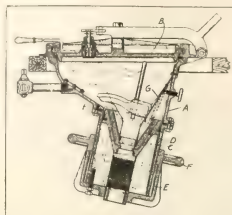
THE UNITED KINGDOM.

- 119,178. Covering rubber-covered electric cables. Fullers Wire & Cable Co., and G. Fuller, Woodland Works, Grove Road, Chadwell Heath, Essex.

MACHINERY PATENTS.

PNEUMATIC SHOE-PRESS.

THIS invention consolidates the parts of a rubber boot or shoe before vulcanization, by the action of compressed air or a suitable fluid under pressure and control by the operator.



GAMMETER'S SHOE-PRESS.

The receptacle A is provided with a hinged cover B of the breech-block type. A cup-shaped conoidal last support C is lined with soft rubber that accommodates different lasts and seals the chamber by means of the end of the last. The adjustment for different lengths of lasts is effected by the movement of the last support that slides in the cylinder D. The stem of the last-support has a left-hand

thread screwing in the end of E, which has a right-hand screw connection with the cylinder-wall exterior and adjustable by handwheel F. A spring plate G forms a back-rest for the lasted shoe.

A last with a shoe thereon is placed in the chamber with the top of the last resting in the last-support, and the back of the heel resting against the back-rest. The cover is then closed and locked and the compressed air turned into the chamber, its effect being to force the last more tightly into the packing member and also to press the shoe tightly against the surface of the last. The air between the shoe and the last is expelled through the vent holes and the parts of the shoe are consolidated by the difference between the pressure of the atmosphere on the inside of the last and the external pressure in the chamber. When the operation is completed the chamber is opened and the lasted shoe removed and vulcanized in the usual way. (J. R. Gammeter, Akron, Ohio, assignor to The B. F. Goodrich Co., a corporation of New York, United States patent No. 1,283,144.)

OTHER MACHINERY PATENTS.

THE UNITED STATES.

- N. O. 1,281,461. Trimming machine. A. J. Wills, Brookfield, Mass.; M. B. Wills, executrix of A. J. Wills, deceased.
 1,281,463. Machine for plaiting rubber fabric. A. J. Wills, Brookfield, Mass.; M. B. Wills, executrix of A. J. Wills, deceased.
 1,281,522. Collapsible core for tires. F. B. Converse, Akron, O., assignor to The B. F. Goodrich Co., New York City.
 1,281,600. Rubber core for tires. G. H. Lewis, assignor to The Fisk Rubber Co.—both of Chicago, Ill., Mass.
 1,281,660. Scrape-stone brush. M. A. Regolie, assignor to The Goodyear Tire & Rubber Co.—both of Akron, O.
 1,282,085. Apparatus for testing rubber. W. Jameson, Springfield, assignor to The Fisk Rubber Co., Chicopee Falls—both in Mass.
 1,282,294. Unwarping machine. A. W. Ross, Akron, O.
 1,282,503. Shoe-dipping machine. J. H. Wall, Bristol, R. I.
 1,282,643. Testing-machine clamp. H. L. Scott, Providence, R. I.
 1,282,644. Testing machine. H. L. Scott, Providence, R. I.
 1,283,038. Repair vulcanizer. J. E. Bancroft, Toledo, assignor to The National Rubber & Specialties Co., Cincinnati, both in Ohio.
 1,283,275. Vulcanizing-patch-holding device. W. E. Nye, Highlands, Cal.
 1,283,337. Power stitcher for retreading automobile tires. R. H. Sikes, Los Angeles, Cal.

THE UNITED KINGDOM.

- 119,241. Rubber-mixing machine. F. H. Banbury, Ansonia, Conn., U. S. A. (Not yet accepted).
 119,242. Rubber-mixing machine. F. H. Banbury, Ansonia, Conn., U. S. A. (Not yet accepted).
 119,269. Apparatus for trimming rubber heel-pads, soles and tips for boots, etc. Wood-Mine, Limited, and J. Sumner, Ribblesbank Mills, Preston, Lancashire, England.
 119,394. Expandible tire mold. S. Yoshida, 88 Kanasugi-Kamimachi, Shitaya-Ku, Tokio, Japan.
 119,622. Calendaring machine. W. J. Mellers-Jackson, 28 Southampton-Buildings, London (Morgan & Wright, Jefferson avenue, Detroit, Mich., U. S. A.)

Rubber-Producing Weeds in Germany.

IN the fall of 1906 the Editor of this journal was in Hanover, Germany, the guest of the late Dr. Adolph Prinzhorn, one of the founders of the Continental Caoutchouc & Gutta Percha Co. Dr. Prinzhorn in addition to his knowledge of rubber manufacture had studied crude rubber production thoroughly in South America, Africa and in the Far East. Speaking of crude rubber supplies for Germany, if for any reason wild and plantation sources failed, he said:

We have done much in synthetic rubber, and if forced to do it could make it in quantity in times of peace. If we were at war, however, the basic materials for such manufacture would not be available. Therefore, I do not believe that we could depend upon synthetic rubber. There are, however, as you know, many lesser producers found in the temperate zone, as the milkweed, for example. We have many such in Germany, Austria, Asia Minor and in Southern Russia. Were crude rubber so scarce that it sold in Germany, say, at \$10 a pound, such sources would inevitably be utilized. Indeed, they are all being examined and classified by our botanists as a possible supply if normal sources become unavailable. They also offer cultivation possibilities for rubber alone, or for rubber, fiber, and other useful by-products.

Reviewing the conversation in the light of the present situation in Germany, it is wonderfully interesting. Very little rubber from the Amazon, from Africa, or from the great plantations in

THE "SICILIAN ARTICHOKE."

The *Abtractylis gummiifera* L. is a composite, similar to the artichoke in appearance, and yields considerable rubber. It is not found wild in Germany proper, but was cultivated there. The root analyzes as follows:

	Per Cent.
Rubber	36.46
Resin	\$1.32
Organic impurities	1.40
Inorganic	2.31
Albumen	4.07
Moisture	4.24

THE SPINDLE TREE.

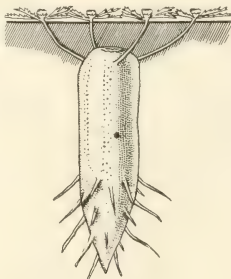
The genus *Euonymus*, of which there are found three varieties, is very common all over Europe. It is commonly known as the Spindle tree. Of the three varieties, *E. europaeus* L., *E. xulgaris Scopoli*, and *E. angustifolius Vill.*, none are thought to contain enough rubber to warrant extraction.

THE SOW THISTLE.

Of the three species, the *Sonchus oleraceus* L. is the most promising. Dr. Kassner, in the "Chemiker-Zeitung," more than 20 years ago declared that it was worthy of serious attention. The plant, according to his analysis, contained valuable green and yellow dyes, wax, a flexible wool useful in paper manufac-



SONCHUS OLERACEUS.



ABTRACTYLIS GUMMIIFERA.



EUPHORBIA CYPARISSIAS L.

the Middle East has been received by the Central Powers since 1914. The amount that was smuggled in through neutral countries was so small as to be practically negligible. Furthermore, crude rubber sold in Germany at \$12 per pound. In spite of this, much rubber was used. Zeppelins, observation balloons, airplanes, submarines, field telephones, and scores of other war appliances used rubber up to the last. Was it largely synthetic rubber or was it obtained from shrubs and plants grown in Germany?

Of German plants known to contain rubber there are several that have attracted attention. Indeed, fully 20 years ago the idea of growing rubber in Europe was seriously discussed. Several indigenous *Compositae*, *Apocynaceae* and *Euphorbiaceae* were found which yielded rubber or a rubber-like gum. Among these are *Sonchus oleraceus* L., or *Laiteron*, of Central Europe; the *Abtractylis gummiifera* L. of Sicily, and in Germany the *Arzneibush* and the *Wolfmilch* group, *Euphorbia palustris* and *Euphorbia cyparissias*, together with the *Euonymus Europea*, a dogwood known as *Fusain* or *Spindle tree*.

ture, and india rubber. The bagasse, consisting of more than 60 per cent of the whole, formed an excellent fodder with a proportion of 2½ per cent of nitrogen and 15½ per cent albumen. The sow thistle, originally a native of Europe, is now found in the temperate zone nearly all over the world, and is often carelessly called milkweed.

THE WOLF-MILK TREE.

Three native *Euphorbias*, or wolf-milk trees, the *E. pilosa*, *E. palustris* and *E. cyparissias*, are found in Central Europe, and all contain rubber.

According to Scheermesser, these *Euphorbias* are well worth exploitation. His procedure was to gather the nearly matured plants, dry and grind them to a coarse powder. This was treated with a solvent. The extract, dark-green and pungent, contains a rubber-like substance and fat. It was estimated that one hectare (2.47 acres) of *E. cyparissias* would produce 50 kilos (110 pounds) of rubber and 140 kilos (309 pounds) of fat. The latter is useful in soap manufacture, and is said to have food value also.

ANOTHER RUBBER WEED.

There is still another plant, a pest in times of peace, that has been examined for the rubber it contains. It is the *Tithymalus pepulus*. Cultivated and treated in the same manner as the *Euphorbia*, it produces per hectare 43 kilos of rubber and 120 kilos of fat. Not quite as good as the *Euphorbia*, but perhaps worth exploitation when labor is forced, fats almost unobtainable, and rubber worth \$12 a pound.

THE EDITOR'S BOOK TABLE.

FUNGI AND DISEASES IN PLANTS. BY E. J. BUTLER, M.B., F. L. S. Thacker, Spink & Co., Calcutta and Simla, India. (Cloth, 16 pages, net price, 200 illustrations, 342 pages.)

THIS valuable handbook on the crop diseases of India caused by fungi is practically if not actually the first in an important and unexplored field. It was intended that the book should be primarily for the use of the trained staff of the Agricultural Departments in India, but will be found useful to every planter and to students of plant diseases. The book deals with field and plantation crops only. It is divided into two parts, the first of which comprises a general treatment including chapters on the nature of fungi; the food of fungi; life-history of parasitic fungi; the causation of disease by fungi, and the principles of the control of plant disease. The second part treats of special diseases of many Indian crops, concluding with a chapter of the diseases of rubber (*Hevea*, *Manihot*, *Castilloa* and *Ficus*).

Ten rubber-tree diseases are minutely described in their various phases, and methods of control are suggested where known. The well-known "pink disease" and "black thread" are stated by the author to be, at present, the most serious diseases of *Hevea* in India.

THE NETHERLANDS INDIA RUBBER YEAR BOOK, 1918-1919. Second edition. Published (in Dutch) by the "Netherlands India Rubber Journal," Batavia, Java. (Octavo, 282 pages.)

This little reference work gives information about rubber growers and rubber traders' associations in the Dutch East Indies and elsewhere, about experiment stations, relief funds and trade unions. It also furnishes ready-reckoning tables, rubber statistics, information about rubber markets, and a small dictionary of terms used in the rubber trade to enable Dutch East Indians to understand what they may find in trade publications printed in Dutch.

NEW TRADE PUBLICATIONS.

THE LINK BELT CO., CHICAGO, ILLINOIS, HAS ISSUED A HANDSOME 52-page booklet devoted to "Economic Handling of Coal and Ashes, and Reserve Coal Storage," with many explanatory diagrams and half-tone illustrations. It is not a catalogue, but a description of improved fuel-handling devices in many of the best industrial power-plant installations of the country, and it will be studied with interest and benefit by rubber men contemplating new plants, additions or improvements.

* * *

THE GENERAL MAGNESITE AND MAGNESIA CO., PHILADELPHIA, PENNSYLVANIA, HAS ISSUED FOR THE CONVENIENCE OF RUBBER WORKERS A NEAT FOUR-PAGE LOOSE-LEAF FOLDER OF HEAVY CELLULOID CONTAINING TABLES OF FACTORS FOR DETERMINING SPECIFIC GRAVITY OF RUBBER COMPOUNDS. The first table gives the volume ratios corresponding to unit weights, from one to nine, of the ordinary compounding ingredients. Similarly the second table gives volume ratios for unit weights from one to nine, corresponding to specific gravities from 1.00 to 1.70. The use of these data is explained by directions and calculated examples.

* * *

THE CENTRAL SCIENTIFIC CO., 460 EAST OHIO STREET, CHICAGO, ILLINOIS, HAS ISSUED A COMPLETE ILLUSTRATED CATALOG OF LABORATORY APPARATUS (Catalog C). All kinds of apparatus listed are "Made in America" and include a full line of everything used in testing laboratories.

RUBBER TRADE INQUIRIES.

This inquiries that follow have already been answered; nevertheless they are of interest not only in showing the needs of the trade, but because of the possibility that additional information may be furnished by those who read them. The editor is therefore glad to have those interested communicate with him.

(679.) A reader inquires for the address of the manufacturer of "Victor" tennis shoes.

(680.) Requests have been received for the addresses of manufacturers of zinc collars and caps for ice bags.

(681.) A foreign correspondent asks for the addresses of manufacturers of elastometers and durometers for rubber testing.

(682.) A manufacturer requests the address of manufacturers of rubber machinery for making seamless, transparent rubber nipples.

(683.) An inquiry has been received for the address of manufacturer of compounding lubricant sold in Canada under the name "Kastroleum."

(684.) Information is requested as to makers of elastic-band cutters. Prices and time of probable delivery of such machines are also asked for.

(685.) Inquiry is made for quotations on power-driven shears or machinery suitable for cutting rubber tubing two inches in diameter.

TRADE OPPORTUNITIES FROM CONSULAR REPORTS.

Addresses may be obtained from the Bureau of Foreign and Domestic Commerce or its district or cooperative officers. Request for each should be on a separate sheet, and state number.

(27,687.) The manager of an organization in Switzerland desires an agency for the sale of automobile accessories on a commission basis. Correspondence may be in English.

(27,691.) A man in Switzerland desires an agency for the sale of automobile and truck accessories. Correspondence may be in English.

(27,740.) A representative of an Australian firm, who is in this country, desires an agency for the sale of hat elastic, 8 or 10 cord (black or white).

(27,748.) A man from Peru, at present in the United States, wishes an agency for the sale of automobile accessories. Correspondence may be in English.

(27,762.) An importer and commission agent in Southern Italy desires an agency for belting.

(27,791.) A man in France wishes to secure an agency on sale of rubber goods of all kinds, automobile casings and inner tubes, waterproof cloth and clothing, and heavy rubber blocks for machinery.

(27,779.) A company in Canada desires to purchase or to secure an agency for automobile accessory specialties. Terms, cash against documents for either purchase or agency.

(27,790.) A firm in Brazil wishes to secure an agency for the sale of belting. Quotations to be f.o.b. New York. Credit terms, 120 days required. Correspondence may be in English.

(27,791.) A man in France wishes to secure an agency on commission for the sale of balata belts. Correspondence should be in French.

(27,796.) Two men who are to form a partnership in France desire an agency for automobile and truck accessories. Correspondence may be in English.

(27,810.) A company in Norway desires to purchase and secure an agency for the sale of rubber shoes. Cash will be paid. Correspondence may be in English.

(27,811.) A commission agent in France will represent firms for the sale of motor-car and motorcycle accessories. Correspondence may be in English.

New Goods and Specialties.

A SANITARY HAIR-BRUSH.

A HAIR-BRUSH that can be sterilized is something to be desired by everybody who appreciates dainty toilet accessories. The "Maid of America" hair-brush is of this type. The bristles are vulcanized into a rubber pad and this rubber pad is removable. All that is necessary to do to remove it from the brush is to press firmly with both of one's thumbs against the side of the bristles. This springs the pad so that it can be easily removed. After the pad has been removed it can be sterilized. When replacing the pad it is only necessary to insert the heel first, catching the notch at the end where the small hole appears. The rubber then remaining out of place can be readily pressed into position. (A. Steinhart & Bro., 860 Broadway, New York City.)



"MAID OF AMERICA" HAIR-BRUSH.



SHERMAN HOSE CLAMP.

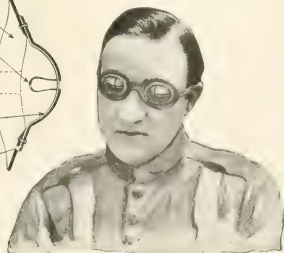
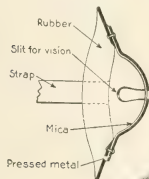
A RUSTLESS HOSE-CLAMP.

A style of hose-clamp that is made in varying thicknesses of different sizes is shown here. It is rust-proof throughout, will not injure hose, and wears for a long time. A long tongue, shaped and run in the channel, prevents the hose from bulging between the ears and insures an even grip all around. The clamp conforms to the shape of the hose. Stiff, heavy ears form the nut lock, preventing the nut from turning

when tightened; and they cannot tip together when drawn up. There are also heavy shoulders which give a good bite to vise jaws, so that the clamp can be drawn exceedingly tight. (H. B. Sherman Manufacturing Co., Battle Creek, Michigan.)

SHRAPNEL GOGGLES.

Professor Terrien, an eminent French eye specialist, and Major M. E. Cousin, observing the large number of French



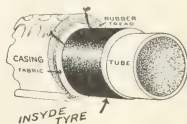
RUBBER-BRIMMED EYE-PROTECTORS.

soldiers injured in the eyes, not long ago devised an eye-shield, shown herewith. The goggles are pressed from a plate of metal

one millimeter thick, convex in shape, with transverse vertical and horizontal slits overlaid with mica, for the admission of light. The brims are covered with rubber to make them gas-proof. These goggles prevent many injuries.

THE "INSIDE TYRE."

A new device to take some of the pressure from inner tubes against the outside tire of automobile wheels has been devised, which is illustrated here in section. It is made of tough fabric vulcanized over a tire mold so that it fits the inside of a tire casing exactly. The outside is coated with rubber which vulcanizes itself to the inside of the casing, thus preventing slipping, while the part that comes in contact with the tube is coated with rubber which has been treated so that the tube will not stick to it. This device increases the life of tires and can be used over again after the outside tire is worn out. (The American Automobile Accessories Co., Baltimore & Ohio Railroad and Blue Rock street, Cincinnati, O.)



A GOOD-LOOKING ACCELERATOR FOOT-REST.

A new contrivance intended to guard against unintentional rapid acceleration when driving over rough roadways or street crossings, and to relieve the foot from continuous tension, is embodied in the good-looking device shown herewith. It is composed of an indented rubber roller vulcanized to a steel tube which revolves on a steel spindle riveted to the uprights. Graduated indentations make the foot-rest adjustable to various heights and positions, the adjustment being made by means of tightening nuts. The Stanwood adjustable accelerator foot-rest is adaptable to all makes of cars and permits delicate advancement or retarding of acceleration.

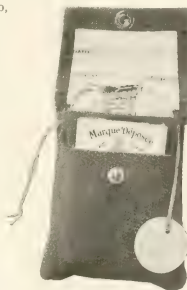


THE "STANWOOD" ACCELERATOR FOOT-REST.

(Stanwood Equipment Co., 307 Plymouth Court, Chicago, Illinois.)

IDENTIFIABLE TOBACCO CONTAINER.

A container for tobacco which provides a place for the insertion of an identification card and a photograph must appeal to the heart of every soldier who smokes. The one illustrated is made of waterproof material with a flap provided on the inside with a mica or similar shield to cover the identification card of the owner and a small photograph. This container will hold any stock size package of granulated tobacco and manufactured cigarettes. The original package is thus kept intact and is protected from moisture, while it keeps in one place all necessary articles. (L. Sence & Son, 110 West 14th street, New York City.)



THE "TRENCHER."

Courtesy of "Popular Science Monthly."

Interesting Letters From Our Readers.

AN EXCEEDINGLY GRATIFYING LETTER.

THE Rubber Association of America is in receipt of a letter from the Rubber Trade Association of London, regarding an article which appeared in "Truth" of London, and which caused much indignation on this side of the water. That the British rubber trade were equally indignant was also at once made manifest in letters and telegrams. Now that a definite protest comes from the Associated Rubber Manufacturers in Great Britain the incident is closed, and good feeling is wholly restored. The letter follows:

TO THE RUBBER ASSOCIATION OF AMERICA, INC.:

DEAR SIRS—I beg to acknowledge with many thanks your various communications to the rubber trade.

In particular we are obliged for the reprint of the leading article from THE INDIA RUBBER WORLD in the current month's issue. That article had already excited considerable interest in the trade here, and I beg to assure you that we are in hearty sympathy with it. The whole matter was brought up at a general meeting of our Association held here to-day, when it was unanimously resolved that I should communicate the trade's opinion to you.

Perhaps I may mention that immediately these very objectionable articles appeared in "Truth" one of our committee communicated with the Editor, contradicting the statements and the whole basis of his offensive insinuations. No one here has anything but severe condemnation for the baseless charges brought by the financial journals against American manufacturers. We, at all events, thoroughly appreciate the high character and fair dealings of these gentlemen, and we can only express our great regret that papers here should lend themselves to such groundless and objectionable matter.

If you can conveniently do so, we should be greatly indebted to you if you would convey the sense of this to your members, as we consider it of great importance that they should realize clearly how strongly we feel on the subject. This is not a time when any possible misconception should be allowed to arise between us.

Yours faithfully,

FOR THE RUBBER TRADE ASSOCIATION OF LONDON.

J. D. JOHNSTON, *Chairman*.

London, England, October 30, 1918.

INFORMATION ABOUT RUBBER SUBSTITUTES IN GREAT BRITAIN.

TO THE EDITOR OF THE INDIA RUBBER WORLD:

DEAR SIR—In the department headed "The Rubber Trade in Great Britain," in your issue of October 1, 1918, we notice a few remarks with regard to rubber substitutes, which are, in our opinion, somewhat incorrect, and are liable to cause your readers to receive a wrong impression.

As you are aware, we have been manufacturing india rubber substitutes, both white and dark, for many years past, and since the outbreak of hostilities have been supplying large quantities of the finest grades for use in connection with government contracts, and owing to the action of the Ministry of Food, Oils and Fats Branch in restricting the use of vegetable oils for certain specific purposes it was impossible for some months for any substitutes to be manufactured, and in this respect only, your correspondent is correct.

Owing to the demand for the india rubber substitutes, representations were made to the Ministry of Food by ourselves and several firms manufacturing these materials, and as a consequence an association was formed called "The India Rubber Substitute Manufacturers' Association," in order that the trade could be rationed as far as supplies of vegetable oils were concerned, and at a meeting between representatives of the association and the

Industries Sub-Committee of the War Priorities Committee this committee decided that an allocation of oils sufficient for all orders, accompanied by Priority Certificates should be made, and further, that an allocation up to 60 per cent. of the amount used in the year 1917 should be made for civil work. The action of this committee is therefore sufficient evidence to prove that the material is required for work of national importance.

Your correspondent further states that the amount of mineral matter added to the substitutes shows a tendency to increase. As far as we are concerned this is not the case. We have been manufacturing several grades of both white and dark qualities, and the finest of these contain very little mineral matter, but, of course, it is possible to obtain cheaper grades containing fairly large amounts of mineral matter.

In our opinion, india rubber substitutes should be considered more as compounding ingredients than as adulterants, because, as is well known, india rubber substitutes are incapable of being used by themselves, and further, in many cases the use of india rubber substitutes is essential to obtain certain physical results.

In conclusion we would like to add that before the war we shipped very large quantities of india rubber substitutes, particularly in white grades, to your country, which in itself is sufficient to show that the india rubber trade in the United States made use of this material to a large extent.

Yours faithfully,

TYPEK & KING, LIMITED.

W. W. KING, Director.

RUBBER-PRODUCING PLANTS IN SICILY.

TO THE EDITOR OF THE INDIA RUBBER WORLD:

DEAR SIR—For several years I have been studying, from a scientific and industrial standpoint, several rubber plants and have found that some of them, which are indigenous to Sicily and Libya, contain a good quantity of rubber for industrial use. These plants are rather abundant in a wild state and can easily be cultivated.

But to make use of these plants, and control their possibilities, I need adequate financial means, and would like to get in touch with people who would be willing to associate themselves with me in this undertaking. I am ready to furnish all necessary explanations.

I ask you therefore to communicate my wish to your readers and thank you in advance.

GIOVANNI ETTORE MATTEI.

Via Maestri d'Acqua al Massimo 5, Palermo, Sicily.

TIRE TALC AND GRAPHITE FOR INNER TUBES.

Tire talc makes the best lubricator between the inner tube and the casing. Caution should be exercised in its use, however, because if too much is used a quantity will collect in one place, generating heat and forming a weak spot. The B. F. Goodrich Co., Akron, Ohio, says that the talc should be distributed evenly over the surface; sifting on the tube when revolving is a simple and efficient method.

Graphite is an excellent lubricator for tires subjected to extra heavy duty and excessive speeds. Racing drivers use graphite, but only after sifting on to the revolving tube through a sieve made of cheesecloth. This method is necessary, otherwise several flakes of graphite might accumulate in one point thereby causing deterioration—the oil in graphite being a foe to rubber.

For the average motorist who does not run his car continuously, day in and day out, the judicious use of tire talc is recommended.

News of the American Rubber Industry.

CHARLES B. SEGAR, PRESIDENT OF THE UNITED STATES RUBBER CO.

CHARLES B. SEGER, chairman of the board of directors of the Union Pacific Railroad System, was elected president of the United States Rubber Co., New York City, at the regular meeting of its board of directors held December 5, 1918. Mr. Seger will retire from railway management and devote himself to the rubber industry. Colonel Samuel P. Colt, who has served the company for eighteen years as president, was elected chairman of the board. Lester Leland, for many years vice-president of the company, was elected vice-chairman.

Resolutions were passed by the board of directors expressing high appreciation of Colonel Colt's faithful and able services in advancing the company's annual business from \$25,000,000 to \$200,000,000; in greatly expanding the scope of its manufactures, notably in tires; by acquiring other companies; in making direct provision for the production of a substantial part of its crude rubber on its own plantations in Sumatra; and in the permanent funding of the company's large indebtedness.

The control of the company remains the same as for many years. Colonel Colt will continue to direct the financial policy, with more time to devote to special work for the benefit of the company. Mr. Leland, long with the company, is known to be in hearty accord with Colonel Colt's policies. Under the by-laws revised last year Mr. Seger, the newly elected president, will have direct charge of operation.

NEW INCORPORATIONS—1918.

Connecticut Tire & Rubber Co., Inc., December 18 (New York), \$2,000. H. S. Hartstein, 250 Havemeyer street, C. S. Weldon, 591 7th street, M. Kittay, 723 Monroe street—all of Brooklyn, New York. To manufacture tires, etc.

Highland Rubber Corp., December 18 (New York), \$50,000. L. R. Eastman, 116 West 39th street, C. L. Eastman, 213 West 40th street, D. D. Deutsch, 1789 Broadway—all of New York City. To deal in tires and tubes.

Hygeia Respirator Co., The, December 11 (New Jersey), \$35,000. N. Schwartz, 251 West 34th street, New York City; L. Schwartz, 32 Monroe street, B. Spitzer, 21 Monroe street—all of Passaic, New Jersey. Principal office, 32 Monroe street, Passaic, New Jersey. Agent in charge, L. Schwartz. To manufacture, buy and sell gas-masks.

Keystone Solethor Corp., December 3 (New Jersey), \$25,000. G. H. Bruce, 320 Broadway, New York City; D. Stone, 524 Ingham avenue, Trenton, New Jersey; F. J. Bruce, 286 Sixth avenue, Brooklyn, New York. Principal office, 524 Ingham avenue, Trenton, New Jersey. Agent in charge, D. Stone. To manufacture synthetic and artificial leathers, floor coverings, gasket sheeting and combined rubber and fiber products of all varieties.

Ninigret Mills Co., The, November 20 (Rhode Island), \$550,000. F. E. and C. S. Fowler and C. Perry—all of Westerly, Rhode Island. Principal office, Westerly, Rhode Island. To manufacture, buy, and sell all kinds of textile fabrics, including auto tire fabric.

O'Connor & Haupt, Inc., December 6 (New York), \$2,000. J. Wagner, 19th street, Elmhurst, New York; H. J. O'Connor, 1517 avenue A, W. Haupt, 325 east 51st street—both of New York City. To deal in tires and rubber goods.

Para Tire Sales Corp., December 18 (New York), \$3,000. T. O'Callaghan, Hollis, Long Island; C. W. Reynolds and W. B. Harris—both of 129 West 37th street, New York City. To sell tires.

Tire Export Co., Inc., December 5 (New York), \$2,000. S.

Bernheim, 35 Nassau street, New York City; C. A. Weldon, 591 7th street, M. Kittay, 723 Monroe street—both of Brooklyn, New York. To manufacture tires.

Universal Rubber Products Co., Inc., December 4 (New York), \$250,000. L. and G. Harrington and E. Renard—all of 1476 Broadway, New York. To manufacture tires, rubber goods, etc.

White Plains Tire & Rubber Co., Inc., December 18 (New York), \$1,000. H. S. Hartstein, 250 Havemeyer street; C. S. Weldon, 591 7th street; M. Kittay, 723 Monroe street—all of Brooklyn, New York.

RUBBER FLOORING EXHIBIT.

The United States Rubber Co., New York City, made a very interesting exhibit of rubber tiling and matting at the National Hotel Men's Exposition held in Madison Square Garden, New York, December 16 to 21. The display consisted of "Usco" molded sheet rubber flooring, stair treads and perforated matting. The flooring is made in a wide range of designs and color



EXHIBIT OF THE UNITED STATES RUBBER CO.'S MECHANICAL GOODS DIVISION.

effects and is rapidly increasing in popular favor. Owing to its excellent wearing quality and security of footing it is replacing carpets on marble stairs in many of the large hotels and theatres. Areas totaling from 1,000 to 5,000 square feet are in service in several of the principal hotels in New York City.

Another interesting feature was the "Usco" non-slip stair tread which is secured in place by means of rubber cement and requires no drill holes or metal nosings.

The exhibit was in charge of Albert C. Heyman, sales manager of the United States Rubber Co.'s tiling department for New York City and State.

J. P. DEVINE CO. EXPANDING.

The J. P. Devine Co., Buffalo, New York, manufacturing vacuum drying apparatus and equipment for rubber mills, is building a two-story brick and steel addition to its machine shop, to be 26 by 102 feet, at a cost of \$11,000. New machinery to be installed for the manufacture of special apparatus on a large scale made this extension necessary. The foundations for a new foundry are also being put in. This building will be 90 by 160 feet when completed.

CHARLES B. SEGER.

CHARLES BRUNSON SEGER, the newly elected president of the United States Rubber Co., was born in New Orleans, Louisiana, August 29, 1867. He was educated in the public schools of that city, his business experience beginning as



CHARLES B. SEGER.

office boy with Morgan's Louisiana & Texas Railway and Steamship Co., successively rising from clerk to steamship auditor, traveling auditor, and chief clerk to general auditor, he became auditor and secretary of the Galveston, Harrisburg & San Antonio Railway Co., and Texas and New Orleans Railroad and Direct Navigation Co., also holding the same offices in the Galveston, Houston & Northern Railway Co. In 1900 he went to San Francisco as auditor of

the Pacific System of the Southern Pacific Railway Co., a few years later becoming general auditor of the Union Pacific System, rising to comptroller in 1911, and being elected vice-president in 1913. In 1918 he was made chairman of the executive committee of that system.

It will thus be seen that Mr. Seger has spent the larger part of his business life in leading railway systems, but he is connected with the management of many important corporations, including the United States Trust and Mortgage Co., Western Union Telegraph Co., New York Central Railroad Co. and Illinois Central Railroad Co., being a member of the executive committees of the last two organizations mentioned. For the past two years he has been a member of the board of directors of the United States Rubber Co. and of its executive committee.

He will retire as chairman of the board of directors and as president of the several companies comprising the Union Pacific System and devote his time largely to the affairs of the United States Rubber Co. His broad general experience and his familiarity with the affairs of this company will make him eminently fit for the new and responsible duties now devolving upon him.

TRADE NOTES.

The Cutler-Hammer Manufacturing Co., Milwaukee, Wisconsin, manufacturer of electric controlling devices, held a conference in that city during the week of December 7, 1918, for the benefit of its men who direct the district office sales of wiring devices, push-button specialties, and molded insulation. W. C. Stevnis, sales manager, A. H. Fleet, manager of the wiring devices department, and Edward Karl were in charge. The various district offices were represented by M. F. Coyne, Boston; F. J. Walker, New York; G. W. Donkin, Pittsburgh; C. N. Gilmore, Cleveland, and Z. S. Myers, Chicago.

The Republic Rubber Co., Youngstown, Ohio, in addition to its offices in the Singer Building, New York City, its premises at 229 West 58th street, and its service station at 213 West 64th

street, has leased a part of the building at 228-230 West 58th street, in the same city.

The Hardman Rubber Corp., Belleville, New Jersey, has acquired the business of the Endurance Tire & Rubber Co., New Brunswick, and will move to the latter place where it will make a new line of cord tires for pleasure cars and trucks, as well as tire tubes.

The G. & J. Tire Co., Indianapolis, Indiana, a subsidiary of the United States Rubber Co., New York City, is building a new warehouse.

The American Rubber Corp., New York City, has removed from 225 West 52nd street, to 1974 Broadway, where it will maintain offices and sales room. It has also opened a repair department.

The Independent Airless Tire Co. has secured a factory at Independence, Missouri, and is installing machinery which it hopes to have in operation within the next few months. The officers of the company are: E. S. Galloway, president; Eben Miller, vice-president; Harold Galloway, treasurer; and E. C. Harrington, secretary.

The Yarnall-Waring Co., Chestnut Hill, Philadelphia, Pennsylvania, manufacturer of "Yarway" power-plant devices, has acquired a three-acre tract of land at Mermaid lane and Devon street, on the line of the Chestnut Hill division of the Philadelphia & Reading railroad. A three-story stone mansion on the premises is being converted into general offices and a one-story machine shop has been erected and is now in operation.

The Norwalk Tire and Rubber Co., Inc., Norwalk, Connecticut, is making a new fibre sole composed of long-strand fibres and rubber in such a manner as to permit it to be sewed or nailed in the same way as leather soles.

The Ajax Rubber Co., Inc., New York City, at a meeting of its directors held on December 17, 1918, duly resolved to issue 20,000 additional shares of common stock, par value \$50, in order to provide \$1,000,000 additional working capital. The entire issue has been underwritten to net the company the amount needed. Stockholders of record on December 27 were entitled to subscribe for the new shares at the rate of ten for each 71 shares already held, at \$55 per share.

The Archer Cord Tire & Rubber Co., 711 15th avenue, N. E., Minneapolis, Minnesota, at a stockholders' meeting held on November 18, 1918, elected the following directors: W. P. Bigelow, William A. Bieter, Maurice A. Hessian, Frederick Graham, Dr. W. B. Cory, Thomas Wilder, and Vance Chamberlain. These, in turn, elected the following officers: W. F. Bigelow, president; William A. Bieter, vice-president; and Maurice A. Hessian, secretary and treasurer. The company will manufacture cord fabric casings and automobile tubes on a large scale, in addition to its regular cord tires. It has installed special machinery for the purpose.

The Rouden Manufacturing Co., 1361-1365 Atlantic avenue, Brooklyn, New York, makes "Liberty Brand" hospital sheeting, "Gem" metal hot-water bottles, and "Excellento" ice bags. It is one of the largest producers of ice bags in the world. It also manufactures high-grade metal caps and collars for manufacturers of druggists' sundries. This plant is unique in that it manufactures for itself all of its own varied products under one roof.

After the first of the year, J. Spencer Turner Co., 86 Worth street, New York City, will handle the product of the Lowell Weaving Co., manufacturer of Sea Island and Egyptian tire fabrics.

J. Spencer Turner Co., New York City, will move this month to 56 Worth street. The interior of the building has been remodeled, affording modern offices in the center of the cotton goods district.

VAST PEACE OPPORTUNITIES IN THE AMERICAN RUBBER INDUSTRY.

IN a recent press interview, Colonel Samuel P. Colt, chairman of the board of the United States Rubber Company, New York City, outlined at some length the vast opportunities awaiting the American rubber industry on the coming of peace. Extracts from his statement follow:



COLONEL SAMUEL P. COLT.

AMERICAN RUBBER INDUSTRY DEPENDENT ON FOREIGN COUNTRIES.

The rubber manufacturing industry in America stands about fourth or fifth in the value of its products. It is dependent wholly upon crude rubber produced in foreign countries, largely by foreign capital. The entire automobile industry rests upon the rubber industry, as that in turn is built

upon the steady flow of crude cultivated rubber from the Far East. There is probably no other industry in the United States so dependent upon foreign countries as the rubber industry.

The United States has always been the largest manufacturer of rubber goods. The value of rubber manufactures in the United States for the year 1917 was nine hundred million dollars. This is approximately seven times as much as the value of rubber manufactures in the next largest manufacturing country and more than twice as much as the rest of the world put together. In ten years the United States has increased its consumption of crude rubber from 24,000 tons to 177,000 tons, while Great Britain, the next largest manufacturer, increased from 14,000 to 26,000 tons. While Great Britain was doubling her consumption we multiplied ours by nearly seven and a half.

AMERICAN MANUFACTURERS SHOULD PRODUCE CRUDE RUBBER.

The great bulk of the capital invested in rubber plantations is British and amounts to about \$400,000,000. Some American manufacturers have made a start in growing rubber for their own uses in the Far East, but American investments in that direction amount to less than three per cent. of the total capital that has been put into the industry. It would seem that one of the lines of future development of the American rubber industry should be in the direction of production of crude rubber by the American manufacturer.

FUTURE TRADE OUTLOOK PROMISING.

The outlook in the rubber industry for the reconstruction period, aside from the development that may be necessary in American-owned rubber plantations, is most encouraging. Business has been good after all wars and this should be no exception. There is a good deal of money in the country and it is more widely distributed than ever before. Everything points to a huge demand, and the rubber manufacturers at least should look forward to a largely increased volume of business. In some lines of rubber goods, notably tires, the factories will be taxed to capacity to supply the home demand.

The adjustments necessitated by various restrictive measures and the specialization of production for war needs will be accomplished with little difficulty, and such products as are adapted to foreign markets will be pushed there, but in many cases it will be some time before the greatest foreign markets will be in a position to receive and pay for American goods. In the meantime, the far-seeing producer will make his plans for the great development of foreign business that awaits the American manufacturer.

GOODYEAR TIRE MACHINE PATENT INVALID.

FIRESTONE WINS IN UNITED STATES COURT OF APPEALS.

MILLIONS of dollars annually will be saved by automobile tire manufacturers by virtue of the decision handed down by the Court of Appeals for the Sixth Circuit, at Cincinnati, on December 13, 1918. In 1914, The Goodyear Tire & Rubber Co., through its president, F. A. Seiberling, started litigation against the Firestone Tire & Rubber Co. for infringement of alleged basic patents protecting the Goodyear tire-finishing machine, the patents being the one granted to Seiberling and Stevens, in 1904, and the one granted to W. C. State, in 1909.

The infringement suit was tried in the District Court of Cleveland, Ohio, both the Goodyear tire machine and the Firestone tire machine being set up in the court-room and operated in order to demonstrate the manufacture of the casings to the presiding judge, John M. Killets. Some twelve months later the Court decided the case in favor of the Goodyear company, giving the patents referred to such a comprehensive meaning that all tire manufacturers would have had to pay tribute to the Goodyear company in the shape of royalties if the verdict had been sustained.

The Firestone company appealed the case, furnishing bonds higher than any we have ever before recorded in patent litigation. After the appeal had been argued in the higher court, early in 1917, but before a decision had been rendered, new evidence was introduced relating to a patent granted to an inventor named Mathern in Belgium in 1906. In the basement of the Cincinnati Postoffice the Goodyear and Firestone machines were again set up and also a reproduction of the Mathern machine, using framework and many parts loaned by the Hood Rubber Co., of Watertown, Massachusetts, they having bought this machine from Mathern in 1909. The full bench of judges adjourned court to the basement to witness the working of the machines and then took the case under advisement for a year.

They have now pronounced the alleged basic patents to be invalid for want of invention, as well as for lack of combination. The Firestone company is freed from all charge of infringement, the decree of the District Court is reversed, and the record is remanded to the lower court with instructions to dismiss the bill.

DIVIDENDS.

The Apsley Rubber Co., Hudson, Massachusetts, has declared its regular semi-annual dividend of three and one-half per cent on preferred stock, payable January 1, 1919, to stock of record December 31, 1918.

The Archer Cord Tire & Rubber Co., Minneapolis, Minnesota, has declared a stock dividend of ten per cent, payable January 1, 1919, to stock of record December 20, 1918.

The Canadian General Electric Co., Limited, Toronto, Ontario, Canada, has declared its regular quarterly dividend of two per cent, payable January 1, 1919, to stock of record December 14, 1918.

The Kelly-Springfield Tire Co., New York City, has declared a quarterly dividend of \$1.50 per share on its six per cent preferred stock, payable January 2, 1919, to stock of record December 16, 1918.

PERSONAL MENTION.

John B. Lurie, for many years with The New York Belling & Packing Co., 91 Chambers street, New York City, has been appointed manager of its advertising department.

Frank C. Risselt, well known in the rubber trade, has been appointed manager of the new office of the Cameron Machine Co., New York City, at 503 First National Bank Building, Cincinnati, Ohio.



FRANK C. RISSELT.

W. E. Byles has reestablished his brokerage and commission business in crude rubber and general Eastern produce at 59 Broad street, New York City.

Guy E. Tripp, until recently a brigadier-general, has resigned from the Ordnance Department of the Army and resumed his former position as chairman of the board of directors of the Westinghouse Electric & Manufacturing Co., 165

Broadway, New York City. Alfred W. Sewell, formerly branch manager at Buffalo, New York, for the Sewell Cushion Wheel Co., Detroit, Michigan, has been appointed manager of the Detroit branch, with headquarters at the factory.

Owen M. Pryor has been appointed distributor of the products of the Sewell Cushion Wheel Co., Detroit, Michigan, for the State of Florida, with headquarters at 1827 Pearl street, Jacksonville.

W. M. Burrell has been appointed efficiency man to study trade conditions and sell merchandise in various sections of the country for the Foster Rubber Co., 105 Federal street, Boston, Massachusetts.

John A. Fowler has been appointed a trade commissioner of the Bureau of Foreign and Domestic Commerce and will visit the Dutch East Indies and British Malaya for the purpose of extending American trade in the Far East.

Prescott C. Ritchie, Western representative of the automobile equipment department of the Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pennsylvania, has transferred his headquarters from Indianapolis to the Conway Building, Chicago, Illinois.

John B. Livingston, engineer of the storage battery department of the Eagle-Picher Lead Co., New York City, in Cleveland, Ohio, and Miss Irene Arthurs, of Pittsburgh, Pennsylvania, were married in Chicago, Illinois, on November 27, 1918.

L. E. Schumacher, for the last eight years chief inspector of the Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pennsylvania, has been promoted to the position of works manager of the Krantz Manufacturing Co., one of the company's subsidiaries, at Brooklyn, New York.

William Keane has been promoted from the position of assistant manager to that of manager of the Pittsburgh, Pennsylvania, branch of the Sterling Tire Corp., Rutherford, New Jersey.

C. D. Cortright has been appointed manager of the Rochester, New York, branch of the Sterling Tire Corp., Rutherford, New Jersey. He succeeds William E. Housel who recently was appointed a first lieutenant in the Army.

G. B. Corrigan has been appointed manager of the Boston, Massachusetts, branch of the Sterling Tire Corp., Rutherford, New Jersey, succeeding Elmer Benny who was recently transferred to the Brooklyn, New York, office.

H. J. Smith, an American rubber engineer and general manager of the Neumáticos Nacional Sociedad Anónima (National Pneumatic Co.), Barcelona, Spain, is in the United States for the purpose of purchasing solid-tire and boot-and-shoe equipment.

Frank A. Sharpe has been appointed district manager of the Thermoid Rubber Co., Trenton, New Jersey, in Detroit, Michigan, with offices in the Kresge Building.

M. A. PEARSON JOINS THE ALLEN MACHINE CO.

After January 1, Morris A. Pearson will be associated with the Allen Machine Co., Erie, Pennsylvania, in connection with the design and manufacture of a complete line of machinery for rubber goods manufacturers.



M. A. PEARSON.

Mr. Pearson's experience covers over 20 years, practically all of which has been connected with the rubber trade, where he has many valued friends. He was formerly with the Farrel Foundry & Machine Co., which he served 14 years, resigning his position in 1912 to gain a more practical knowledge of the mechanical needs of the trade, for which purpose he located in the Akron, Ohio, district. Through the offices of a prominent Akron manufacturer, he accepted a position

with the Turner, Vaughn & Taylor Co., the well-known manufacturer of rubber machinery. Within the last six years he has designed the complete mill and calender equipment for over 20 new tire factories, requiring frequent increases of manufacturing facilities. He has contributed articles of interest to THE INDIA RUBBER WORLD, and was recently elected a member of the American Society of Mechanical Engineers.

THE OBITUARY RECORD.

SPENT HIS LIFE IN THE RUBBER BUSINESS.

HERBERT C. SEVERANCE, secretary and general manager of the Racine Rubber Co., Racine, Wisconsin, died of pneumonia, induced by influenza, at his home in that city on November 21.

Mr. Severance was born in Cambridge, Massachusetts, October 28, 1878. He attended the public schools in that city, graduating from the Cambridge Manual Training School in 1897, and entered the employ of the Reading Rubber Tire Co., maker of bicycle tires. The next few years saw him affiliated with other tire concerns, his progress steadily upward. In 1900 he went to the Hartford Rubber Works Co., Hartford, Connecticut, as a salesman, and in this capacity was transferred to Minneapolis, Minnesota, as branch manager. Afterwards he managed the Detroit, Michigan, branch, and when the Hartford company was consolidated in the United States Tire Co., he remained in Detroit as branch manager, and in 1912 became manager of the Chicago branch of the United States Tire Co. In 1913 he resigned this position to become general sales manager of the Racine Rubber Co., and in 1914 was elected secretary, both of which positions he held at the time of his death.

He is survived by his widow, his father and mother, and two sisters. He was affiliated with Masonic bodies in Cambridge, Massachusetts, and Racine, Wisconsin, and was also a member of the B. P. O. Elks. Charitable, yet unostentatious, of a quiet, unassuming, and democratic character, he had many business and personal friends who deeply mourn his loss.

THE BULL'S EYE RUBBER CO.

Extensive alterations and improvements in the Long Island City plant of the Bull's Eye Rubber Co. have been completed and operations will start at full capacity early in January. Vulcanized sheet work, rubberized cloth specialties, unvulcanized tire and tube repair stocks, heels, soles, hat-bags, dash-pots and friction rings are the products. The factory is under supervision of Arthur C. Squires, and Harry W. Doherty has charge of the business management.

THE RUBBER TRADE IN AKRON.

By Our Regular Correspondent.

THE convention of the Ohio Automobile Trades Association opened in Akron on December 5, 1918. About one thousand delegates were in attendance.

Mayor I. S. Myers opened the session and A. O. Wood, president of the Summit County Dealers' Association, also welcomed the visitors. Several addresses and papers by rubber men were features of the program.

W. O. Rutherford, general sales manager of The B. F. Goodrich Co., spoke on "Organization." He declared the war was shortened by the organization of industry and said the War Industries Board was the most powerful commission ever created. He advocated looking beyond the boundaries of this country in the organization of commerce, and expressed the opinion that the country will soon be a power in world trade. He discussed the importance of the motor truck as a means of transportation, and declared the development of a good road system is as important a factor in reconstruction as the railroad was to former eras.

A paper written by H. S. Firestone, president of the Firestone Tire & Rubber Co., was read by C. M. Hamel, his secretary, Mr. Firestone being unable to attend. Rubber, Mr. Firestone maintained, is the most important commodity in the world. In 1917, he said, \$189,000,000 worth of rubber products were manufactured; the figure this year will amount to \$800,000,000. He declared that the rubber industry is bound to grow. Aside from the growing demand in this country, he said, Germany must buy rubber. A section of a tire from a captured German airplane was exhibited, showing it to be made from rubber scrap and rattan.

F. A. Seiberling, president of The Goodyear Tire & Rubber Co., who was to have spoken on the subject "After the War—What?" was unable to reach the city in time. In his place, Harry Quine, advertising manager of the Goodyear company, spoke. He read a telegram from Mr. Seiberling, declaring that Akron is ready for prosperity and that labor and materials alone are needed.

Mr. Quine advocated a Highway Department in the President's Cabinet. He said the road system of the state will be a powerful factor in future transportation because of the growing popularity of the motor truck as a freight and express-hauling medium.

Resolutions were passed advocating the repeal of the Sherman anti-trust law; to indorse the standardization of tires as an economy measure; to indorse all other economy measures advocated during the war by the Council of National Defense; to reinstate in their former positions all returning soldiers; to appeal through the state organization for the elimination or correction of all unscrupulous dealers, and to urge the creation of a highway board whose function shall be to boost good roads.

Confidence in the outlook for a prosperous period of reconstruction, and advocacy of more complete organization of the factors of the automobile trade, seemed to be the key-notes of the convention.

The delegates were taken in trucks to the various rubber factories of Akron and shown through the plants.

The General Tire & Rubber Co., Akron, held its annual sales convention December 4-5, 1918, at which approximately 150 salesmen and distributors from all over the country were present. Intensive sales plans for the coming year were discussed and a comprehensive national advertising campaign laid out.

"The New Opportunity" was the subject of an address by W. C. D'Arcy, president of the Associated Advertising Clubs of the World.

The entertainment included special lunches served at the company's plant, a lake dinner at Young's Hotel, theatre parties and the annual banquet at the Akron City Club.

The company is building a new three-story structure to house its offices, a new power-house, and other additions to its plant.

C. J. Hazen has been placed in charge of advertising and publicity for The General Tire & Rubber Co.

* * *

The B. F. Goodrich Co., Akron, has recommended to its employees a home-purchase plan similar to its group plan of life insurance. Suggestions are being received by The B. F. Goodrich Co. for a memorial to be erected in memory of the 31 Goodrich employees who have been killed or died in service.

James W. O'Meara, of the News Bureau of The B. F. Goodrich Rubber Co., Akron, has been mustered out of service and returned from Camp Taylor, where he entered the last Officers' Training School.

* * *

The Miller Rubber Co., Akron, has converted \$3,000,000 worth of its authorized first preferred stock into 8 per cent second preferred stock, of which \$2,000,000 has been underwritten. The company has completed all of its building operations.

* * *

The Mason Tire & Rubber Co., Kent, at its annual meeting on November 25, 1918, reelected all of its directors, as follows: O. M. Mason, D. N. Mason, D. M. Mason, M. B. Mason, R. W. MacKinnon, J. H. Diehl, and W. A. Cluff.

The report of the company for the fiscal year ended October 31, 1918, shows gross sales of \$2,324,144.19 in 1918 against \$1,200,000 in 1917; net profit of \$203,406.47 in 1918 against \$104,457 in 1917; and declared dividends of \$132,861.16 in 1918 (including 6 per cent payable on common stock during 1919) against \$48,486 in 1917.

John H. Diehl, general sales manager and one of the directors of The Mason Tire & Rubber Co., Kent, has been elected vice-president, in charge of sales.

* * *

The Firestone Tire & Rubber Co. held its annual meetings of stockholders and directors, including several thousand employees, at the Firestone Club House, Akron, on December 16, 1918. H. S. Firestone, president of the company, presided, and stated that the sales for the year had amounted to \$75,801,506.79 against \$61,587,219.29 during the preceding year, an increase of \$14,214,287.50, or 23.7 per cent. The profits for the year, after allowing for depreciation, losses, taxes, etc., were \$8,320,442.26, which included \$2,610,000 paid in dividends.

During the year the company's plant known as No. 2 was completed and used exclusively for government work, but this work has now been practically completed.



ANNUAL BANQUET OF THE GENERAL TIRE & RUBBER CO.'S SALESMEN.

The addition to the power-house is nearly finished and all machinery is on hand and paid for with the exception of a 25,000-horse-power steam turbine to be delivered in January.

* * *

The Mohawk Rubber Co., Akron, has increased its capital from \$10,000 to \$50,000, to take care of the growth of its business.

* * *

The Wellman-Seaver-Morgan Co., Cleveland, Ohio, known the world over as the manufacturer of general and special machinery, has opened offices at Akron, Ohio, for the convenience of rubber manufacturers. It will manufacture a new line of machinery to include calenders, mills, tubing machines, vulcanizing presses, molds, and cores, with a special type of 200-ton solid-tire applying press.

* * *

The H. J. Adams Co., representing manufacturers and importers of raw materials for the rubber industries, has established itself at 624 Second National Bank Building, Akron, and will carry in its warehouse in the same city stocks of all principal items.

THE GOODYEAR TIRE & RUBBER CO. STATEMENT.

According to the annual report of this company for the fiscal year ended October 31, 1918, the last year's business has been the most successful in volume and profits in the history of the concern. Sales were \$131,247,382 against \$111,450,643 for the preceding year; net profits were \$15,388,190 against \$14,044,216 for the preceding year. During the year dividends were paid on the capital stock as follows: First preferred, 7 per cent, \$1,693,328; second preferred, 8 per cent, \$506,407; common, 12 per cent, \$2,451,816.

The balance sheet as of October 31, 1918, follows:

ASSETS.		
Plant, as per books:		
Real estate and buildings.....	\$15,577,398.80	
Machinery and fixtures.....	14,207,646.81	
		\$29,785,045.61
Patents, trademarks, designs.....		1.00
Securities owned—Book values:		
United States Liberty Loan bonds (all issues).....	1,466,950.00	
Miscellaneous.....	3,896,552.69	5,363,502.69
Preferred stock, purchased and held in Treasury:		
1st Preferred (1,475 shares, par value \$147,500).....	135,465.44	
2nd Preferred (145 shares, par value \$14,500).....	14,170.80	149,636.24
Notes receivable of officers and employees for capital stock, secured by such stock to the par value.....	\$1,472,200.00	1,112,017.19
Employees' subscriptions for 2d preferred stock (balance unpaid).....		513,633.24
Inventory and current assets:		
Inventories.....	\$30,507,966.81	
Accounts and notes receivable (provision in reserve for doubtful items, \$231,445.30).....		13,353,985.00
Advances to—agents, salesmen and companies.....	2,101,278.25	
Cash on deposit and on hand.....	6,344,490.11	52,307,720.17
Advances to the Goodyear Improvement Co. and to The Goodyear Heights Realty Co.....		3,488,956.62
Suspended assets (provision in reserve for doubtful items, \$208,323.98—see contract).....		208,323.98
Prepaid rentals, interest, insurance, etc.....		690,181.46
		\$93,619,018.20

CAPITAL AND LIABILITIES		
Capital stock (par value \$100 per share):		
1st Preferred (paid in full and cumulative).....		
Authorized and issued.....	\$25,000,000.00	
Less—redeemed.....	1,216,200.00	\$23,783,800.00
Second preferred (8 per cent cumulative):		
Authorized \$25,000,000.00 (issued).....	14,233,000.00	
Reserved for issue to employees (contract).....	7,607,000.00	15,000,000.00
Common (unpaid).....		20,466,800.00
		\$9,250,600.00

Current liabilities:		
Accounts and acceptances payable.....	\$5,687,407.36	
Accounts payable.....	1,432,045.71	
Payable for United States Liberty bonds.....	571,500.00	
Accrued first preferred dividend.....	138,738.84	
Second preferred dividend payable Nov. 1, 1918.....	253,791.21	8,083,483.12
Reserves:		
For doubtful accounts (current)—see contra.....	231,445.30	
For doubtful accounts (suspended assets).....		208,323.98
For insurance on branch stocks.....	31,335.82	
For depreciation of plant.....	5,096,473.90	5,567,579.00
Surplus, subject to Federal taxes for the year.....		20,717,356.08
		\$93,619,018.20

All of the officers and directors of the company have been re-elected for the ensuing year.

THE RUBBER TRADE IN BOSTON.

By Our Regular Correspondent.

THE rubber factories in Boston and vicinity have slowed up more or less in the last month of the year. The cancellation of government contracts has been one cause, and another is that many factories choose the last week or two of the year to make changes and repairs, or add new equipment, and to take the annual inventory. The opinion generally expressed is, that while it may take a little time for business to readjust itself from war to peace conditions, the rubber trade promises to be prosperous during the year just opening.

* * *

The Boston Rubber Shoe Co. is enlarging its working force, taking on all its old employees who are returning from service in the Army here or abroad. Having been released from government contracts, the factories are now employed entirely on civilian goods, and are making large tickets every day. Both factories shut down the last two days of December for inventory and repairs, to open promptly January 1 with a full force, and, presumably, business enough ahead to keep that force busy the entire coming season.

* * *

There was held in this city December 30 a general convention of the foremen of the Footwear Division of the United States Rubber Co., calling together the officers of that division of the company's interests, and the superintendents and foremen of the several factories where footwear is made. The convention was held during the day in the auditorium of the City Club, about 500 being present. In the evening a banquet was held at the Hotel Somerset, when an orchestra composed entirely of men from the National India Rubber Co., Providence, furnished the music. The hall was gaily decorated with bunting, the flags of the Allies, and the insignia of the company. Charles B. Seger, the newly elected president of the company; Homer E. Sawyer, vice-president in charge of the Footwear Division, and Myron H. Clark, general factory footwear manager, were among the speakers.

* * *

William J. Gallagher, expert plantation adviser of the United States Rubber Co. and former Director of Agriculture in the Federated Malay States, addressed the Brockton, Massachusetts, Commercial Club Saturday evening, December 14, on "Cultivating Rubber in the Middle East."

* * *

Frederick C. Hood, of the Hood Rubber Co., Watertown, presided at the third annual meeting of the Associated Industries of Massachusetts, held in this city November 26. The following resolution was adopted:

Resolved, That the Associated Industries of Massachusetts, representing more than one thousand industrial concerns in the Commonwealth, believing that those who, in time of public danger, gave up their places to serve the country and who wore its uniform should have the preference in private employment upon

being discharged from public service; and recognizing the obligation of the managers of industry to promote and safeguard the health, comfort and welfare of the workers, pledge this association to use its best endeavors to secure those results.

At the evening meeting, which assumed the character of a Victory Rally, Vice-President Thomas R. Marshall, Major-General Clarence R. Edwards and Howard Cooley, former vice-president of the association, and now vice-president of the Emergency Fleet Corporation, were the principal speakers. Music was furnished by the United States Aviation Band.

At the annual meeting of the Employment Managers' Association of this city, Fred S. Sparrow, formerly with the Hood Rubber Co., Watertown, was elected vice-president. Ralph G. Wells, of the E. I. du Pont de Nemours Powder Co., president of the National Association, was one of the speakers. He outlined the policy and program of the organization to develop and strengthen existing local associations, and to assist in the formation of others. The readjustment of employment methods to meet the coming needs, and the trade tests applied to those called to the colors, were subjects of other addresses.

Mr. Sparrow, mentioned above, for six years employment manager, has severed his connection with the Hood Rubber Co., and is succeeded by Herbert L. Baxter, formerly assistant manager of the cutting room. The employment manager's position with this company is one of unusual importance, as the company hires its workmen not only in the rubber industry, but in many lines of labor in the building trades, doing its own work of this kind instead of having such work done by contract.

The gross sales of the Boston Woven Hose & Rubber Co. in its fiscal year ended September 1 last totaled \$10,200,000, an increase of 30 per cent over the 1916-17 figure of \$7,800,000, and by far the largest twelve months' business in the history of the company. A goodly portion of this business was for government account but, being in the company's regular lines, did not entail rearrangement of plant or equipment to any great extent. The signing of the armistice found the company with no large army orders on hand, however. It still has contracts for furnishing goods to the Navy which will not be cancelled.

The national interest in canning and preserving food during the year stimulated the demand for jar rubbers and this resulted profitably for the Boston Woven Hose & Rubber Co. The sales for the year ending September 1 totaled nearly 4,000,000 gross or nearly 10,000,000 pounds of rubber rings. The company makes public no income account, but from the balance sheet it would appear that net earnings last year approximated \$1,000,000 after depreciation, taxes and other property setups. At the close of business September 1, the company had net quick assets of \$3,175,000, or approximately \$500,000 more than the working capital of the previous year.

It is reported that Albert H. Hadley, of the Chemical Research Co., of Lynn, has discovered and perfected a substitute for rubber cement, the result of fifty years' investigation of cements. His family was among the first people in the country to make rubber cement.

Boston imported crude rubber to the value of \$2,550,124 in the year ended September, 1918, as compared with \$920,040 for the corresponding period in 1917. The exports of manufactured rubber goods for the same periods were \$1,166,482 for 1918 and \$1,212,560 for 1917.

ANNUAL S. A. E. MEETING.

The annual meeting of the Society of Automotive Engineers will be held in the Engineering Societies' Building, West 39th street, New York City, February 4-6, 1919.

THE RUBBER TRADE IN RHODE ISLAND.

By Our Regular Correspondent.

THE year 1918 closes with the several plants constituting the rubber industry of Rhode Island being operated at the same capacity-breaking schedule that has been the record for nearly four years. Although there has been considerable cleaning up on government contracts and sub-contracts within the past month or six weeks, no anxiety has been caused as to the prospects of plenty of work for an indefinite period among the rubber workers, as all the mills are so far behind on regular goods that it will take many months to overtake the normal demands.

The New Year finds a great change in the labor situation that is one of the chief topics of interest among the manufacturers of all lines throughout the State. Up to within a few weeks there has been the same persistent and insistent demand for labor that has prevailed during more than four years. At the present time there appears to be more men seeking positions than there is demand for. The result is that manufacturers, planning for the reconstruction period, are able to be more selective in taking on additional help.

All of the rubber concerns of Rhode Island have materially improved their plants and facilities during the past year, and a number have plans now perfected for a further expansion and improvement. Changing conditions will, it is believed, afford them the desired opportunity of carrying to a successful termination certain plans which, in a number of instances, have been under consideration for a long time. Not only has considerable attention been given to the increasing of the facilities of productiveness in the factories, but the health, welfare and comfort of the employees—individually and collectively—have been looked after in a manner never before equalled in the industrial history of this section.

Plant extensions of the United States Rubber Company furnish convincing proof of the belief of its officials that pneumatics are to be the truck tires of the future, and that the demand for solid tires will be less and less, even for heavy hauling purposes on big trucks. By the end of January, the new tire plant of this company, at Providence, Rhode Island, will probably be completed. It will employ 5,000 men and will be capable of turning out \$20,000,000 worth of solid and large pneumatic tires annually. Further expansion calls for the building of a new cord tire unit in addition to the plants at Providence and Detroit, Michigan, the location of which has not yet been determined.

The plant of the National India Rubber Co. at Bristol is the scene of continual activity because of the improvements that are constantly being made. Not only are there numerous additions, alterations and renovations in progress all the time but many new and novel innovations for the comfort and betterment of the employees are being introduced. Everything possible for the health, safety and general welfare of the operatives is being done by the management, one of the latest acquisitions along this line being the holding of dental clinics, plans for which are now being carefully worked out. The employees are to benefit by the plan, as attention will be given to employees' teeth without delay whenever necessity arises. A dentist will devote regular hours at a room which is now being fitted up for the purpose, and emergency cases will be immediately looked after. Should an employee's teeth require more attention, the patient will visit the dentist at his local office.

The company is also engaged in the preliminary work of organizing a band of 35 pieces, the company to provide the instruments, and the band to be under the direction of a leader who is to arrange for meetings for practice at certain periods each week.

Women employees of the National company have entered into

a series of weekly military drills at the De Wolf Inn. A number of the women who board at the Inn, which is conducted by the corporation, began the drills some time ago and upon their invitation many of the other women are joining their ranks.

Douglas Morey, who has been head of the planning and industrial relations departments of the National company, succeeds H. W. Brown, recently resigned, as head of the employment bureau. The three departments have been consolidated.

Many of the hands released from other manufacturing plants in Bristol recently, owing to the curtailment on orders, are securing employment at the factory of the National India Rubber Co.

The National company closed its entire plant at Bristol on December 27 for the annual taking of stock. The mill, in which 4,500 hands are employed, is scheduled to resume operations on January 3.

The American Electrical Works, manufacturers of insulated wire, etc., at Phillipsdale, in East Providence, are planning a number of improvements in connection with their power distribution service, a contract having already been awarded to construct an intake pipe of reinforced concrete, 300 feet in length and 30 inches in diameter. The engineers in charge of the work have recently completed a study of the company's power plant with a view to offering recommendations as to additional units or changes necessary for increased efficiency. A new centrifugal pump with a capacity of about 1,800 gallons per minute is to be installed and the construction of a pump-house is proposed, the engineers being engaged at present in drawing the plans for this building, which will be of brick, one story, about 20 by 20 feet. Further improvements in the near future are forecasted.

The Woonsocket Rubber Co. has opened its restaurant for employees at its Millville plant and catered to 200 on the first day and over 225 on the next. The restaurant is modernly equipped and the excellent menu is in charge of an experienced chef, assisted by an able corps of attendants. The food is sold practically at cost. In the first of the company's restaurants, which was opened several months ago at the Alice Mill, Woonsocket, more than 300 persons are catered to daily. Hot meals are appreciated at both places.

A permit has been granted by the Inspector of Buildings to the Bourn Rubber Co. for the erection of a one-story brick-and-concrete structure on Warren street, Providence. It will be 90 by 60 feet and is to be used for storage purposes.

An addition is being erected on Hemlock street to the plant of the Revere Rubber Co., that will be one story high, and about 120 by 32 feet. It will be practically of steel construction and is intended for manufacturing purposes.

THE RUBBER TRADE IN TRENTON.

By Our Regular Correspondent.

THE signing of the armistice was quickly followed by orders to cease manufacturing war material. Trenton rubber manufacturers were ordered to continue work on only such goods as were already in process. The Empire Rubber and Tire Co. and the Acme Rubber Manufacturing Co. are completing such orders. The Essex Rubber Co. had a large contract for gas-masks, but the work was quickly stopped. The United & Globe Rubber Manufacturing Co. are working on a large government order for fire hose. This order was not cancelled.

Trenton rubber manufacturers announce that the tire business is not as prosperous as during the summer, and that this is not unusual at this season of the year. They predict a boom in the tire and tube line after the first of January. Meanwhile the plants are kept busy on other lines of work.

The corporate name of the city is to be changed from "The Inhabitants of the City of Trenton" to "City of Trenton."

E. B. Knowles has been appointed general sales manager of the Thermoid Rubber Co., Trenton. He succeeds the late Harold F. Blanchard, whose portrait and obituary notice appeared in THE INDIA RUBBER WORLD for November 1, 1918.

Practically every rubber-manufacturing concern in Trenton has informed the Federal-State-Municipal Employment Agency that it will give the returning soldiers and sailors their former positions. Arrangements have been made to reemploy all of those disabled in service in such a way that by providing mechanical or other aid they can be made self-supporting.

At the annual meeting of the Trenton Rubber Manufacturers' Association, which comprises the Trenton, Wilmington and Philadelphia districts, the following officers were elected: John A. Lambert, president, Acme Rubber Manufacturing Co.; John S. Broughton, vice-president, United & Globe Rubber Manufacturing Co.; Robert J. Stokes, secretary, Thermoid Rubber Co.; Alfred Whitehead, treasurer, Whitehead Brothers. The board of directors decided to contribute \$100 semi-annually towards the support of the Trenton Day Nursery. The association contributes to various other charitable institutions.

William E. Sanders, publicity man for the Essex Rubber Co., recently gave an address on "Rubber" before the Trenton Kiwanis Club.

The Delion Tire & Rubber Co. has nearly completed a two-story all-steel structure 40 by 100 feet to be used as a core room.

The Thermoid Rubber Co. has completed an eighty-foot addition, two stories high, at a cost of \$36,000.

The Joseph Stokes Rubber Co. has installed a modern fire-fighting system providing an ample water supply throughout its plant. The new equipment will reduce insurance rates considerably.

Charles E. Stokes, vice-president of the Home Rubber Co., has been made chairman of the committee to unite all the civic clubs of Trenton having for their object the publicity, progress and prosperity of the city.

The Hamilton Rubber Co. is erecting a one-story manufacturing building to be used as a kiln plant. The structure will be brick, 28 by 41 feet, and will cost \$2,500.

C. Edward Murray, Jr., second vice-president of the Empire Rubber & Tire Co., and Mrs. Murray have returned from White Sulphur Springs, West Virginia.

The employees of the Ajax Rubber Co., Inc., are perfecting plans for the organization of a patriotic and benevolent association.

Edgar H. Wilson, president and general manager of the Dural Rubber Corp., has proposed that a landing field for freight and passenger airplanes be established in Trenton, and has taken up the matter with the Trenton Chamber of Commerce. Mr. Wilson has a wide knowledge of aircraft parts, particularly those made of rubber. He holds twenty-two patents on aircraft parts and has been consulted by representatives of several foreign governments relative to the rubber parts for planes controlled by him and the Dural company, and which have been extensively used by the United States Government. At the Flemington, New Jersey, plant of the company more than 100,000 parts for aircraft have been manufactured.

Among manufacturing concerns in Trenton that have agreed to form War Savings Stamps societies among employees are the following: Ajax Rubber Co., Inc.; United & Globe Rubber Manufacturing Cos.; Home Rubber Co.; Empire Rubber & Tire Co.; Woven Steel Hose & Rubber Co.; Thermoid Rubber Co.; Essex Rubber Co.; and John A. Roebing's Sons Co.

The Federal Tire & Accessory Co., WRIGHTSTOWN, suffered a fire loss estimated at \$2,500, not covered by insurance, on December 19. The cause was spontaneous combustion.

Charles J. and Aaron A. Moulds, formerly in the employ of the Thermoid Rubber Co. and the Ajax Rubber Co., Inc., respectively, recently spent furloughs with their parents. Both are sailors, the former on the U. S. S. *Rhode Island* and the latter on the U. S. S. *Adams*.

The Epworth League of the Clinton Avenue Methodist Church conducted a rubber social on December 20, the price of admission being a piece of rubber.

CANADIAN NOTES.

The Advisory Council for Scientific Industrial Research has recommended to the Canadian Government to establish at Ottawa a central research institute with the function of a bureau of standards, with a view to establishing standards of measures and materials used in various industries. Manufacturers of rubber goods would benefit equally with other industries by the services of such an institution.

W. Binmore, the retiring treasurer of the Dominion Rubber System, Montreal, Quebec, was given a complimentary dinner at the Ritz-Carlton by his associates prior to his departure for California. R. E. Jamieson, director of sales, presided, and addresses were made by T. A. Rieder, president of the company, and Messrs. Jamieson, Eden, Allan, Thornton, J. M. S. Carroll, and Lieutenant-Colonel Massie. Mr. Binmore was presented with an illuminated address, and with fitted traveling bags for both himself and Mrs. Binmore.

The Oak Tire and Rubber Co., Limited, has removed its head offices from Oakville, Ontario, to 19 Dundas street, East, Toronto, Ontario.

The Hercules Rubber Co., Limited, Brampton, Ontario, is completing its new factory building for the manufacture of all kinds of rubber goods. Machinery, including large horse-power motors, is being purchased and will be installed at an early date. The first line of products will be automobile tires, tubes, and accessories. A. Brown is the secretary and treasurer of the company.

K. & S. Canadian Tire & Rubber Co., Limited, 527 Yonge street, Toronto, Ontario, a recently organized concern whose incorporation was noted in our columns November 1, 1918, will expend \$250,000 in making additions to its plant at Weston. This will cover its requirements in the way of new machinery. Building operations at this point, however, will not commence until early spring.

The Kaufman Rubber Co., Limited, Kitchener, Ontario, won the first honor flag in Kitchener for securing subscriptions to the recent Victory Loan from more than 75 per cent of its employees. The objective was \$26,000 and the amount actually subscribed totaled \$50,300, which was obtained on the second day of the campaign. To this was added \$215,000 subscribed by the company, making the total more than a quarter of a million dollars.

A bequest of \$2,000 has been made to Bishop's College, Lennoxville, Quebec, Canada, in memory of Lieutenant F. Reginald Robinson, who was killed in action on August 19, 1916. He was the son of W. H. Robinson, former president of the Dominion Rubber System.

HUGO WELLEIN.

HARD and conscientious work, beginning at the bottom and going up the ladder round by round, is the record of Hugo Wellein, the recently elected treasurer of the Canadian Consolidated Rubber Co., Limited, Montreal, Quebec, Canada, whose portrait is here presented.



HUGO WELLEIN.

He was born June 21, 1883, at Bridgeport, Ontario, near Kitchener, and began his education in the public schools there. This was followed by three years at Kitchener Collegiate, supplemented by a business course. Starting as office boy with the Berlin (now Kitchener) Rubber Manufacturing Co., where he remained four years, he was appointed accountant to the secretary-treasurer of the Merchants' Rubber Co., Kitchener, in 1904. Six years later he entered the general sales department of the head office of the Canadian Consolidated Rubber Co., Limited, at Montreal. In February, 1913, he became office manager to the manager of the Middle West Division of the company, with headquarters at Winnipeg, Manitoba, and after four years there was appointed manager of the Quebec Division. A year later he became general auditor, and in October was elected to his present position. Thus, for his entire business life of 19 years, he has worked continuously for one concern, for the other companies mentioned all merged to form the present Canadian Consolidated Rubber Co., Limited.

Mr. Wellein is very popular and is held in high regard by all those with whom he is associated in business. He is receiving many congratulations on his recent appointment.

NATIONAL ASSOCIATION OF WASTE MATERIAL DEALERS MEETS.

The quarterly meetings of the National Association of Waste Material Dealers at the Hotel Astor, New York, December 17 and 18, 1918, were well attended. It developed at the meeting of the Scrap Rubber Division, under the chairmanship of David Feinburg, that the Rubber Reclaimers' Division of The Rubber Association now admits that the one-half-cent handling clause of the new scrap rubber packing specifications is undesirable. Freight classification and a possible inspection service for rejected material were discussed. It was also learned that arrangements had been made with the Interstate Commerce Commission to the effect that auto tires may be tied with four ropes, if packages tied with rope and wire are treated alike.

THE CAMERON MACHINE CO., 57 POPLAR STREET, BROOKLYN, New York, has opened a new office in Cincinnati, Ohio, at 503 First National Bank Building. It is fully equipped with samples of the company's line and is intended for a service station as well as a sales office.

"Rubber Machinery," by Henry C. Pearson, is filled with valuable information for rubber manufacturers. Price \$6.

The Rubber Trade in Great Britain.

By Our Regular Correspondent.

WRITING, as I do, with the sounds of revelry and bell-ringing in my ears, on an occasion which need not be specifically mentioned, it is not particularly easy to compose one's thoughts to the somber routine of writing on purely trade matters. This, however, is all I am entitled to do in these columns, and the first matter which inevitably comes to mind is the effect that the welcome cessation of hostilities will have on those hives of industry, the rubber works.

That there must be a transition period of general upset goes without saying, but anything like stagnation to follow the cessation of war demands is most unlikely, owing to the deflection of stocks of all sorts of rubber goods in general civilian use. The rubber trade being concerned with equipment, its products will be wanted for some time, as there is no question of an immediate demobilization, though naturally the rush of work to get out orders has subsided and there will be no occasion for over-time. I suppose that manufacturers, especially proofers, would welcome a more sudden change from war to peace conditions, so that they could tackle their civilian trade, as this would be far more profitable than government work, which is now all done on a strictly cost basis and yields only a fair—perhaps some would call it an unfair—profit. No very rapid change could, however, be made all around, as so much of the cloth in stock has been woven and dyed for government purposes, and it would be quite unsuitable for the civilian trade.

THE RAW RUBBER POSITION.

With regard to raw rubber, it is generally thought that there will be no return, for some time at any rate, to the two shillings per pound figure. I gather that the bulk of the stocks held by manufacturers was bought at 2s. 4d. or 2s. 5d. a pound, the demand having been largely satisfied before the fall to 2s. per pound. As a manufacturer said to me: "All of us are not extremely wealthy men, nor do we want to buy for too far ahead, so there was no rush to buy rubber at 2s." Certainly, if there had been, the price would at once have gone up in accordance with customary market procedure. If the rubber-growing interests could have foreseen the present condition of affairs they would not have asked for a government committee, which has got to work just as a general feeling is making itself articulate in the country to get back to self-management.

TESTING RAINFOOF CLOTH.

At the meeting of the Manchester section of the Society of Chemical Industry, on November 8, a paper on this subject was given by Dr. G. Martin and James Wood. Dr. Martin said that the want of a rapid standard method had been felt in recent times when large quantities of material had to be reported upon quickly. He gave a short account of the various methods of rainproofing with aluminum acetate, gelatine, paraffin wax, etc., and emphasized that such goods, unlike rubber goods, are permeable to air, and, except in the case of wax, to a more or less extent to water. They are popular because they were more healthy than rubbered goods and will always be in demand, he thought, for town use, where shelter from heavy rain is always at hand. After describing Gawalowski's waterproof testing apparatus, he then described the War Office drop test, which is a simple form of apparatus and allows results to be obtained rapidly by a process which imitates the natural fall of rain on the cloth. Drops of water are allowed to fall on a piece of the cloth which is laid on blotting paper on a sheet of glass placed at an angle of 45 degrees. The observer watches the glass from behind, and when water is seen on the blotting paper the number of drops of water is noted by the burette,

reading. The results of many tests were given by Dr. Martin, variation as wide as 6 and 18 drops being noted on the same piece of cloth.

In the subsequent discussion it was urged by two or three speakers that to take the mean of such divergent figures as the result of a test was a very unscientific proceeding. Dr. Martin, however, maintained that though the test was not all that it might be, it still gave very useful results, and, at any rate, was much superior to the dash test and the trough test commonly used in the trade. Mr. Terry said that it was obvious that such a test would not be of any service in the case of rubbered goods in which the government relied upon the number of grains of proofing contained on a certain superficial. He also remarked that inequalities of spreading are a common feature in rubbered goods and suggested that Dr. Martin might look into this matter in the case of showerproofings, as it might explain the wide variation in the figures he had given. In the course of his remarks Mr. Terry referred to the humorous skit which appeared in the September number of *THE INDIA RUBBER WORLD*, the recital of the dialogue between the British and American soldier regarding the latter's rainproof causing considerable amusement. Dr. Martin said that so far he had not tackled the question of rubberproofings, but it was his intention to do so.

DETERMINATION OF LAMPBLACK IN RUBBER.

I see that a method for effecting this has been communicated to the Rubber Section of the American Chemical Society by A. M. Smith, of the Bureau of Standards. I have seen only a short abstract of the method, which consists of the removal by solvents and nitric acid of all substances which would change weight on ignition, and estimation of the carbon by the loss on heating. It is stated that the method is found sufficiently accurate for commercial work when a small correction is made to provide for the errors of the determination. I may say that over 20 years ago I worked out a method on very similar lines, though I have never ventured to return my results as more than a fair approximation. A good deal depends upon the nature of the lampblack. I remember saying something about my method to C. O. Weber and he threw cold water on it by saying that lampblack was considerably attacked by strong nitric acid. Presumably it would be mainly the hydrocarbons in the oily blacks that would be attacked rather than the free carbon, of which the American gas blacks are mainly composed. At this juncture, then, if nitric acid is used in the process, it would be more nearly correct to refer to the determination of free carbon than of lampblack in rubber.

A rubber tire with a large amount of gas black is, of course, a simpler problem to tackle than is a common-grade mixing with a few per cent of inferior black, and I have had in my experience rubber samples in which I have found it impossible to obtain a figure in which I had confidence. With a high-grade simple mixing, however, I can quite support the claim that the method as outlined will give most useful results, and especially in cases where the lampblack used is of a standard quality as to specification.

WASTE RUBBER SALVAGE.

A notice recently appeared in the press that by arrangement with the government departments concerned, national collection of waste rubber was to be undertaken with the object of benefiting the funds of the Red Cross. I have not been able to get any details of the project and find that in reclaiming circles it is looked upon as one more of the many brilliant ideas which have been launched during the progress of the war with the same laudable object in view. Certainly one of the difficulties in the

way of waste rubber collection is that the articles are scattered in units all over the country, and of course if delivered by individuals at some central depots it would certainly get over the important item of cost of collection. It is probable, however, now that peace is in sight, that we shall not hear any more of the project.

TIRE SPECIFICATIONS IN AMERICA.

The specifications for pneumatic tires and tubes adopted by the Motor Transport Corps and given in the October number of *THE INDIA RUBBER WORLD* have been read with much interest on this side. The allowance of sulphur being 8 per cent, calculated on the rubber present, is generally considered an improvement on the 5 per cent usually enforced in European specifications for government rubber goods of much the same quality. The lower limit of sulphur, where it is rigidly adhered to, generally means either that an amount of time is necessitated for the cure, which is detrimental to the rubber, or that various accelerators have to be used.

Those manufacturers who saw the specifications for waterproof garments in which oil substitute and reclaimed rubber were allowed up to a certain figure, and who thought that this sort of thing was general, will note that substitutes and reclaimed rubber are barred by the specifications under notice. Reclaimers who were inclined to be jubilant over the waterproof specifications have had their spirits somewhat dampened, as many of them hold that tire covers can contain reclaimed rubber to advantage. This bar to its use certainly cannot fail to harden the hearts of those responsible for specifications in Europe just at a time when signs of yielding to the seductive influence of reclaimers were apparent. No doubt a prominent factor in the prohibition of reclaimed rubber is the impossibility of estimating its amount by analysis, though for the matter of that it is no easier to say whether the "best wild or plantation rubber" has been used throughout.

The clause which states that if mineral matters containing sulphur are used, a sample of the unvulcanized rubber must be submitted for analysis, is presumably connected with the now general use of lithopone, which contains sulphur both as sulphide and sulphate. The clause is one which might be copied elsewhere with advantage as tending to reduce the complications and tediousness of analysis.

FRENCH EXPORT PROHIBITION LIFTED.

The "Journal Officiel," Paris, for October 29, 1918, announces a ministerial decree permitting henceforth the exportation from France, without special authorization, of rubber goods, other than sheets, vulcanized or not, and drainage tubes and gloves for surgical purposes.

BRITISH GOVERNMENT CONTROL OF RUBBER.

In view of the changed conditions, the whole question of government control of the output and selling price of plantation rubber has been reconsidered by the Council of the Rubber Growers' Association (Incorporated), and the following resolutions have been agreed to:

In view of the cessation of hostilities, the gradual introduction thereupon of peace conditions, and in view of the long delay that experience has shown to be inseparable from attempts to put into practical working any scheme of government control, this council instructs its representative on the government committee dealing with the matter to withdraw all proposals for the government control of the rubber-producing industry, but trusts that he will continue to remain a member of the advisory committee and give his valuable help to the industry.

In view of the indication by various bodies in the East of their approval of the control of the rubber output, and of the opinion of this council that control, on a voluntary basis, is most desirable if it can be made effective, the Output Control Committee be requested at once to draw up a scheme and submit it to the Council, when, if approved, an endeavor can be made to obtain sufficient support to it to make it effective.

The representative of the Rubber Growers' Association has placed its views before the Government Committee, and it is understood that no further immediate steps will be taken by that committee in the direction of establishing any government control of the rubber-growing industry.—"Financial Times," London.

THE TIRE TRADE IN JAPAN, CHINA, AND HAWAII.

Clincher types are most easily obtained in Japan, but straight-side types may be secured through American companies. The one tire factory now established in the Empire is building clincher tires exclusively, but, seeing the probability that in the future straight-side tires will be demanded, has equipment ready to build this style on short notice. Under present conditions, clincher tires assist in selling a car, as most dealers in Japan desire cars fitted with clincher rims and shipped without tires.

The bulk of the replacement business in Japan falls to the Dunlop company, allied with the British company of the same name, working with British and Japanese capital, and maintaining a large factory at Kobe, which makes soft bead tires only, but produces many other kinds of rubber goods. Its business extends throughout the Far East and as far south as Singapore, and it does an immensely larger trade in jinrikisha tires than in auto tires, as there are only five or six thousand autos in all China and Japan, while there are hundreds of thousands of jinrikishas, practically all of which are provided with pneumatic tires.

Black tops for autos meet the demand in Japan, although an option of either black or khaki is appreciated. The climate generally does not go to extremes of hot or cold, so the materials used in standard production in the United States will meet every requirement.

Although the first autos appeared in China in 1901, there are less than 3,000 in the whole Republic to-day, the reason being the impossible roads. At the present time most of the auto tires used in China are standard American makes, but several of the leading European tire makers were represented in China before the war, and will doubtless go after the business again when conditions become normal. Tire prices in China are high as compared with those in America, being affected by freight, duty and exchange.

In the Hawaiian Islands there are more autos than in Japan and China combined, and sales are increasing rapidly on account of the phenomenal prosperity the Islands have been enjoying for several years past. The market for tires is identical with that in the United States for an equal number of cars, say about 6,000. ("Motor Vehicles in Japan, China and Hawaii." Special Agent Series No. 170. United States Department of Commerce.)

A ROYAL RUBBER OFFICE IN HOLLAND.

The Minister of Agriculture, Industry and Commerce has established a Royal rubber office, which is located at 100 Zeestraat, The Hague. G. I. de Vries, former chief of the rubber department of the Netherlands Overseas Trust Co., is the director of the new office. The activities of the Royal office for bicycle tires have been transferred to the new office; the former tire office goes out of existence. L. C. Steffelaar, director of the former tire office has been honorably discharged. The advisory committee of the former tire office will henceforth act in connection with the Royal rubber office.

NATIONALIZATION OF THE RUSSIAN RUBBER INDUSTRY.

The whole of the rubber manufacturing industry in Russia has now been nationalized and is controlled by a body styled the Administrative Department of State Rubber Works, under a decree issued by the Russian National Economic Council, says the "India Rubber Journal," which adds that no private trade connections abroad are to be permitted, and that all such contracts already made are cancelled.

Spanish Market for Rubber Goods.

Special Correspondence.

SPAIN to-day looms up to the American rubber manufacturers as virgin ground for the sale of their products. Before the war 90 per cent of the rubber goods used in Spain were furnished by the Continental-Caoutchouc & Gutta Percha Co., Hanover, Germany; the Prowodnik Rubber Co., Riga, Russia; Michelin & Co., Clermont-Ferrand, France; Pirelli & Co., Milan, Italy, and the Dunlop Rubber Co., Limited, Birmingham, England, and it is safe to say that of the above companies the Continental-Caoutchouc & Gutta Percha Co. of Germany furnished the largest percentage of goods.

Now it will be some time before Germany will be a strong competitor in the manufacture of rubber goods, since nearly all her rubber factories have been stripped and dismantled for war purposes, and, moreover, Germany has practically no crude rubber on hand. During the war she paid unheard-of prices for contraband rubber, which was smuggled into the country by her submarines, and now that the war is over the crude rubber needs of the other countries will be first considered in order to replenish their home requirements for rubber goods. The United States should avail herself at once of the opportunity to put not only rubber but every product into Spain by means of able representatives and good management.

Spain to-day is practically clean of rubber goods and only those of inferior make are obtainable and then at very high prices. The classes of rubber goods most needed at the present time are pneumatic and solid tires, druggists' sundries, hose, packing and a full line of footwear, as well as soles and heels.

There is no doubt that American goods if properly pushed will forge ahead, and Spain will become one of our largest rubber goods consumers, and the same can be said of all South American countries that were formerly supplied for the greater part by Europe.

It should be understood that, although Germany has sent no rubber goods into Spain since the war started, she kept her organizations in Spain at work compiling statistics on the rubber trade, and the Germans know the situation better to-day than we do ourselves. One good point to consider is that some of our products would have to be changed to a certain degree, such, for example, as solid tires, as the road conditions of Spain are very bad and the foreign rubber companies' engineers have made a study of these and supply a solid tire to meet the unusual conditions.

Although there is at the present time a large factory being installed in Spain, practically all of the crude materials must be obtained from abroad and it will be some time before the Spanish labor will become proficient enough to compete with our skilled workmen, therefore "Made in the United States" on any product in Spain to-day is a decided advantage.

In this connection it is interesting to note that the Neumáticos Nacional Sociedad Anónima (National Pneumatic Co.), Bar-

celona, Spain, will add a full line of solid-tire and boot and shoe equipment to that already installed. Although this company was financed entirely by Spanish capital, the factory is supplied throughout with American equipment, installed according to American practice, therefore the products will be like those made in the United States.

The entire installation and construction of the factory were achieved with Spanish labor that had never seen rubber machinery, and while the Spanish laborers are not as expert as Americans they are steady and willing. Great hardships were encountered in procuring pipe, pipe fittings, valves and all such material, as Spain imports all supplies of this nature from other countries and on account of the war it was almost impossible to obtain the necessary supplies to work with. For instance, two-inch pressure pipe was selling for \$5 a yard and all valves had to be cast and made specially to order,

costing five times what they would cost in normal times.

French rubber experts who have visited the factory and examined all the American equipment very closely, say it is one of the best-equipped and most up-to-date rubber factories in Europe.

This will be the first rubber mill in Spain to manufacture all kinds of rubber goods, there being at this time only a few very small factories making specialties.

The factory is 1,000 by 500 feet, built on the one-story plan, and so constructed that additional

units can be added whenever needed. It is situated on the Cardona river, 50 miles north of Barcelona, so that water power will be used to generate the electricity necessary in operating the plant.

THE FAR EASTERN RUBBER CRISIS.

THE rubber situation in the Straits Settlements and Federated Malay States, together with the report of the recently appointed rubber commission, as published in the "Straits Budget," is briefly as follows:

For a while restriction of output had been considered, but then came the recognition of the fact that such restriction without accompanying increase of price would render the producer's position worse, not better. So thought was given to the rate of depletion of pre-restriction stocks and the balance between restricted production and restricted consumption.

PRICE CONTROL.

The commission considers that as artificial restriction of rubber consumption is being met by artificial restriction of production, there must be price control, three courses seeming to be open. The first is control of price by prohibiting export of rubber sold at less than a minimum price, the second is an imperial monopoly in rubber under the control of a rubber trust, the third is control of price by government buying at a minimum price.



CARDONA RIVER DAM UNDER CONSTRUCTION.

IMPERIAL MONOPOLY.

It is doubted whether the first course would afford the assistance that appears to be required, but the commission strongly recommends the second course, imperial monopoly with a rubber trust, to the consideration of the British Government. Each British rubber-producing country would enter the trust to the extent of its restricted output. Holland could be allowed to join the trust. Each country would buy its entire output. The rubber thus bought might be dealt with on joint account, or on separate account, as might be most convenient. The trust would fix the buying and selling prices from time to time and arrange on a pro-rata basis of the output for the allocation of the orders.

If the output of the Federated Malay States was reduced to, say, 46,000 tons a year, and if the buying price was £260 a ton (equivalent to 2s. 4d. a pound), a capital of £11,196,000 would buy up the whole year's output. But such an amount would not be necessary, for the stock would be turned over.

GOVERNMENT CONTROL.

If it is decided not to form an imperial rubber trust, the commission holds that the government (the imperial or local) should be willing to adopt the third course, and buy rubber of a specified grade at a specified price, to be modified from time to time, in accordance with varying factors, when there are no other buyers at that price.

RUBBER GROWERS' ASSOCIATION SUGGESTS MINIMUM PRICES.

The Rubber Growers' Association suggests the following present minimum prices per pound, ex-warehouses, in the Eastern markets at port of shipment: first crêpe, fair average quality, 2s. 3½d.; ribbed, smoked sheet, fair average quality, 2s. 3d.; first crêpe, off quality, 2s. 3d.; ribbed, smoked sheet, off quality, 2s. 2d.; clean, light brown scrap crêpe, 2s. 1½d.; clean, medium brown scrap crêpe, 2s. 0½d.; speckly, medium brown scrap crêpe, 1s. 11½d.; dark to black scrap crêpe, free from heat, 1s. 10½d.

COST OF PRODUCTION.

The cost of production is shown in the following statement, sent in to the commission from 193 estates, which have been divided into classes "A" and "B" estates, whose f. o. b. cost of production does not exceed 45 cents per pound in class "A," other estates in class "B." The monetary figures are in Straits Settlements currency, one dollar being equal to 56.7 cents United States currency.

SUMMARY OF ESTATES' COST OF PRODUCTION FIGURES FOR THE HALF-YEAR—JANUARY 1 TO JUNE 30, 1918.

Class.	Acres Rubber Bearing.	Crop Secured to End June (6 Months).	Average Yield per Acre per Annum.	A. General Charges.	B. General Charges.	C. Up-Keep of Bearing Area.	D. Tapping and Curing.	E. Packing and Despatch.	F. Export Duty and War Tax.	G. F. O. B. Cost if Yield Restricted to 200 Lbs. per Acre.	H. F. O. B. Cost if Yield Free.	I. Percent. Increase in F. O. B. Cost.
				Pounds Rubber.	Cents Rubber.	Pounds per Pound.	Cents per Pound.	Cents per Pound.	Cents per Pound.	Cents per Pound.	Cents per Pound.	Per Cent.
"A" Class, 107 estates.	110,578	16,838,783	304	14.98	6.77	14.31	2.25	2.21	35.31	45.06	27.61	
"B" Class, 86 estates.	74,803	9,370,128	250	16.68	13.59	21.26	2.30	2.33	58.83	61.40	14.06	
193 estates	185,381	26,208,912	283	14.07	9.81	17.41	2.27	2.27	43.56	54.60	22.92	

Note.—Export duty and war tax have not been included in the f. o. b. cost, either unrestricted (G) or restricted (H).

The f. o. b. cost is reckoned without export duty, war tax, local freight, insurance, Singapore selling charges, depreciation, head office charges or directors' fees. The lowest f. o. b. cost, thus reckoned is 20.4 cents, and the highest, 78.29 cents. The cost for one estate is below 25 cents a pound; for 33 estates, over 25 cents and under 35 cents; for 73 estates, over 35 cents and under 45 cents; for 48 estates, over 45 cents and under 55 cents; for 24 estates, over 55 cents and under 65 cents; for 11 estates, over 65 cents and under 75 cents; for three estates, over 75 cents.

SUMMARY OF REPORT.

The following is a summary of report of Rubber Industry Production Commission:

1. Existing stocks plantation rubber in United States of America, United Kingdom, British Malay, and Netherlands East Indies estimated at 148,620 tons.

Returns of stocks in Continental Europe, Japan, Canada; Australia, Ceylon not available.

2. Production of 1917 was 200,000 tons. Even if output of 1918 and 1919 does not exceed this, it amounts to 400,000 tons for those two years.

Estimated consumption plantation, 1918, 150,000 tons; 1919, 117,000 tons.

Apart from existing stocks, therefore, production of 1918 and 1919 will meet consumption of 1918, 1919 and 1920 without touching 1920 crop.

3. Restriction of output plantation rubber therefore necessary as soon as possible, as temporary measure during present period artificially reduced consumption.

4. It is recommended that British and Dutch governments agree to restrict by law their output for a period to be determined later by mutual agreement. Output of Indo-China practically negligible.

5. Flat rate of 50 pounds an acre of tappable rubber for first period of three months is recommended, being at rate of 200 pounds per annum. It may be necessary to reduce this later.

6. System of licenses for estates and coupons for small holdings elaborated in detail and recommended.

7. Recommended that imperial trust be formed by governments of British and Dutch rubber-producing countries, with monopoly of buying and selling for period mutually agreed upon. In respect of rubber produced during restriction of output, price to be paid for first latex sheet or pale crêpe (f. a. q.) one dollar, Straits Settlements currency per pound, ex-warehouse Singapore.

8. If trust not approved, there should be a minimum price, and government of each country should buy output if market price does not exceed minimum price.

9. Minimum price 80 cents Straits Settlements currency recommended for qualities above mentioned.

10. For lower qualities valuations would be made by Standard Qualities Committee to be appointed for that purpose in Singapore.

11. Control should be in hands of Rubber Controller, with residence in Singapore. He should be assisted by advisory committee. There should be under him deputy rubber controllers in Malay, Ceylon and India, with local advisory committees.

There should be independent rubber controller in Netherlands East Indies, working in conjunction with him. Any order varying rate of restriction of output or buying price if there is a trust, or minimum price, would be made by British and Dutch controllers in agreement.

12. All rubber-consuming countries should be asked to pass their orders to rubber controller for allocation or else allocate the orders themselves and report particulars thereof to Rubber Controller.

13. Actual buying, selling and storing rubber can be carried out

by firms now engaged in trade under supervision of deputy rubber controllers.

14. Whether there is trust or minimum price, it is recommended that government should offer to purchase at equitable price stocks of good-quality rubber produced before restriction comes into force, and still remaining in Straits Settlements and Malay States. Quantity of good-quality rubber in Straits Settlements and Malay States estimated at about 25,000 tons.

In conclusion our contemporary points out that, although the war is ended, for a time there will be an increased, not a decreased, demand for shipping on the Atlantic, since America will have to repatriate millions of men as well as to send urgently needed food to Europe. If one reason for the restriction of rubber imports was to force shipping from the Pacific to the Atlantic, it may be quite sure that the need of it there will be as great in 1920 as it is at present, so that the rubber industry has to prepare for a period during which the conditions to be faced will be altogether abnormal.

Recent Patents Relating to Rubber.

THE UNITED STATES.

ISSUED OCTOBER 15, 1918.

- N** O. 1,281,800. Improvable shoe rim. Z. C. Angevine, Long Beach, Calif.
- 1,281,801. Rubber shoe sole and shoes. F. Bernstein, Chelmsford, Mass.
- 1,281,804. Articles of wear with rubber sole. H. S. Hawks, Kansas City, Mo.
- 1,281,809. Tire-tube-repairing kit. G. B. Wood, Detroit, Mich.
- 1,281,876. Rubber-soled shoes for boots and shoes. G. M. Anderson, Wash. D. C.
- 1,281,886. Gaiters for use on tires. H. F. Curtis, Dayton, O., assignor to The B. F. Goodrich Co., New York City.
- 1,281,884. Ballroom shoe. W. L. R. Gammeter, Akron, O., assignor to The B. F. Goodrich Co., New York City.
- 1,281,897. Hose. H. W. Gaudall, Allen, Tex.
- 1,281,858. Armored pneumatic tire. W. O. Gottwald, Washington, D. C.
- 1,281,901. Reinforcement of tire layers. G. H. Lewis, assignor to The Fisk Rubber Co., both of Chicopee Falls, Mass.
- 1,281,890. Demountable wheel. I. M. Algire, Riverside, Calif.
- 1,281,893. Rubber-soled shoe for pneumatic tires. L. E. Bess, Estelene, Colo.
- 1,281,937. Ether-mark. E. Gamble, Waverly, N. Y.
- 1,281,975. Improvements in life-saving garment. R. J. Kee, Toronto, Ont., Canada.
- 1,281,979. Vehicle wheel with pneumatic tire on felloe. W. P. Keogh, Brooklyn, N. Y.
- 1,282,000. Intravenous-injection apparatus. J. H. Quayle, Cleveland, O.

ISSUED OCTOBER 22, 1918.

- 1,282,182. Anti-skid chain for twin tires. I. Brook, Brighouse, Eng.
- 1,282,197. Tubeless tire, rim and lock therefor. F. B. Cumpston, Blooming Grove, Tex.
- 1,282,258. Rubber-shoe last having wood core with metallic surface. M. M. Merritt, Danvers, assignor to Copper Products Co., Boston, both in Mass.
- 1,282,260. Rubber-shoe last with metallic reinforcing strip at top and electrolytically deposited hollow shell, etc. M. M. Merritt, Danvers, assignor to Copper Products Co., Boston—both in Mass.
- 1,282,274. Rubber heel construction for boots or shoes. N. H. Morozowicz, Bellevue Borough, and J. R. A. Farr, Ben Avon Borough—both in Pa.
- 1,282,350. Anti-slipping device combined with rubber heel. H. H. Wood, Oyster Bay, N. Y.
- 1,282,362. Rim-demounting wheel for motor vehicles. E. K. Baker, assignor to Baker Wheel & Rim Co.—both of Chicago, Ill.
- 1,282,397. Stiffened-rubber shoe-sole. H. C. Egerton, Passaic, N. J.
- 1,282,398. Rubber shoe-sole with interlocking stiffener. H. C. Egerton, Ridgewood, N. J.
- 1,282,399. Stiffener for rubber shoe-sole. H. C. Egerton, Ridgewood, N. J.
- 1,282,400. Interchangeable reinforced rubber shoe-sole. H. C. Egerton, Ridgewood, N. J.
- 1,282,427. Resilient wheel-tire. F. J. Johnson, assignor to Johnson Pneumatic Tire Co.—both of Fitchburg, Mass.
- 1,282,428. Resilient tire for vehicles. F. J. Johnson, assignor to Johnson Pneumatic Tire Co.—both of Fitchburg, Mass.
- 1,282,441. Corset with elastic straps. J. Leopold and M. Beberfeld, New York City.
- 1,282,447. Two-part wheel rim for tires. B. J. Oltmanns, Peoria, Ill.
- 1,282,465. Device for maintaining a light in flexible electrical connections. G. L. Scheel, Chicago, Ill.
- 1,285,511. Ink-tablet holder for fountain pens. J. Williams, Abergelle, and L. T. Jones, Old Colwyn—both in Wales.
- 1,282,527. Life preserver. G. Debole, New York City.
- 1,282,569. Truss. A. T. Gookin, Cambridge, Mass.
- 1,282,584. Elastic attachment for shoes to prevent wear on hosiery. M. W. Hunter, Washington, D. C.
- 1,282,586. Belt of leather and elastic webbing cemented together. J. Jacobs, assignor to The Fox Leather Belt Co.—both of New York City. (Original application divided.)
- 1,282,611. Cushion wheel. J. W. Martin, Pittsburgh, Pa.
- 1,282,651. Waterproof-fabric tire protector. W. L. Stuyversson, St. Louis, Mich.
- 1,282,690. Inner tube for tires. J. H. Hamlin, Winston-Salem, N. C.
- 1,282,692. Resilient tire. A. G. Hoegren, Chicago, Ill.

ISSUED OCTOBER 29, 1918.

- 1,282,980. Pneumatic mattress. N. M. Takach, Bridgeville, N. Y.
- 1,283,033. Solid elastic tire. J. M. Avery, Dallas, Tex.
- 1,283,064. Resilient tire. J. W. and G. F. Burgess, Kansas City, Mo.
- 1,283,065. Inner tire-cushion. J. W. and G. F. Burgess, Kansas City, Mo.
- 1,283,095. Toy balloon. F. A. Cumiskey, St. Louis, Mo.
- 1,283,260. Thermostat. H. D. Montgomery, Brooklyn, N. Y.

THE DOMINION OF CANADA.

PUBLISHED AUGUST 31, 1918.

- 1,281,921. Life preserver. M. Hesse, Newark, N. J., U. S. A.
- 1,281,922. Hydrometer. E. Edelmann, Chicago, Ill., U. S. A.
- 1,281,942. Life preserver. D. D. Lyons, Farmington, Minn., U. S. A.
- 1,281,943. Tire for use on rubber bands. O. E. Wall, Honolulu, Hawaii.
- 1,281,944. Elastic material and article support. H. A. Bernstein, New York City, U. S. A.
- 1,281,918. Inflatable tourniquet. C. F. Dorsey, Iroquois Falls, Ont.
- 1,281,937. Waterproof life-saving suit. R. J. Kee, Toronto, Ont.
- 1,281,939. Combined rubber crutch-tip and anti-slipping device. T. J. LeCras, Toronto, Ont.
- 1,281,977. Life-saving garment. Safe on Sea, Limited, assignee of J. E. Lepage—both of Montreal, Que.
- 1,281,925. Hot-water bag for leg-bathing. A. Marion, Estevan, Sask.
- 1,281,935. Pneumatic wheel. E. C. McCarty, Littleton, Ill., U. S. A.
- 1,281,951. Teeth and mouth-cleaner. M. I. Schanberg, New York City, U. S. A.
- 1,281,958. Hot-water bottle. G. M. Scott, née Adams, Scott's Mills, Ore., U. S. A.

PUBLISHED SEPTEMBER 30, 1918.

- 1,281,869. Rubber surgical appliance. H. A. Dygert, Philadelphia, Pa., U. S. A.
- 1,281,881. Diving suit. H. Houdini, New York City, U. S. A.
- 1,281,886. Armored pneumatic tire. I. L. Leo, Toronto, Ont.
- 1,281,844. Laminated shoe-thread of fabric and rubber. L. F. Montgomery, Fort Recovery, and J. E. Grosjean, Lima, assignee of one-half interest—both in Ohio, U. S. A.
- 1,281,863. Lifesaving apparatus. E. Hanz and D. Brady, concentrators—both of Boerne, Texas, U. S. A.

THE UNITED KINGDOM.

ISSUED NOVEMBER 6, 1918.

- 118,840. Artificial leg with rubber pad between toe and body of foot. E. Sauze, 5 rue de la Prefecture, St. Etienne, Loire, France.
- 118,859. Parachute. E. R. Calthorp, Eldon Street House, Eldon street, London.
- 118,860. Spring device of rubber strands, for parachute. E. R. Calthorp, Eldon Street House, Eldon street, London.
- 118,868. Pneumatic-sucker support for ship-repairing apparatus, etc. R. H. Quine, Thirlmere House, Frizington, Cumberland.

ISSUED NOVEMBER 19, 1918.

- 119,121. Pneumatic tire. A. A. Crozier, 3 Woodquest avenue, Herne Hill, London.
- 119,146. Double or triple detachable tire rims. T. J. Hobson, 17 Chain Walk, Aston, Birmingham.

ISSUED NOVEMBER 20, 1918.

- 119,194. Reinforcing fabric insertion for tires. A. S. Burdick, 4457 West Washington Boulevard, and J. C. Hermann, 2848 Wilson avenue—both in Chicago, Ill., U. S. A.
- 119,277. Inflatable bathing suit. A. J. Wakeford, Stirling Lodge, Stonebridge Park, Middlesex.

ISSUED NOVEMBER 27, 1918.

- 119,361. Valves for respirators. E. Kummant, 5 Kasankaia street, Petrograd, Russia.
- 119,386. Brush handle provided with one or more suction cups for attachment to wash basin or other surface for use by one-handed person. C. T. Maw and Maw, Son & Sons, 7 Aldersgate street, London.
- 119,410. Rubber saddle in shock-absorbing bearing for artificial limb. E. Smith, 124 St. Stephens Green West, Dublin.
- 119,485. Latex-encased pump and sprayer. Kapewas Rubber Co., 30 Moorgate street, London. (W. F. Adolph; Kapewas Rubber Co., Pontarck, West Borneo.)

ISSUED DECEMBER 4, 1918.

- 119,566. Artificial foot and leg connected with rubber cylinder. J. Wyllie, Kershaw Engineering Works, Nelson, New Zealand.
- 119,587. Gas mask. E. Kummant, 5 Kasankaia street, Petrograd, Russia.
- 119,588. Latex-encased cup support with cover for cups. Kapewas Rubber Co., 30 Moorgate street, and W. H. Hartley, 7 Sherwood street, Piccadilly Circus—both in London.
- 119,602. Rubber buffers in protective armor for ships. W. Plasecky, 563 Main street, Cambridge, Mass., U. S. A.
- 119,617. Capsule closure with rubber gasket. W. R. Pike, Jericho, Long Island, N. Y., U. S. A.

THE FRENCH REPUBLIC.

PATENTS ISSUED (WITH DATES OF APPLICATION).

- 487,382. (November 2, 1917.) Improvements in fountain pens. W. T. K. Calton.
- 487,494. (November 9, 1917.) Expandable wheel rim for automobiles. J. H. M. Michon.
- 487,514. (November 13, 1917.) Fountain pen. Ramel & Co.
- 487,905. (December 8, 1917.) Life-saving jacket. C. Chaleat, 9 rue Pasteur, Suresnes, France.

- 488,043. (December 18, 1917.) Rubber tire. F. F. Green.
 488,050. (December 14, 1917.) Nipple for feeding bottles. F. R. Graham-Yoell.
 488,097. (October 26, 1917.) Life saving costume. Kalfon Pimentia and J. Pellissini.
 488,162. (December 26, 1917.) Suspenders. J. Coste Floret.
 488,257. (January 3, 1918.) Rubber tire for vehicle wheels. H. L. Harding.
 488,258. (January 3, 1918.) Impermeable and resilient belts of web or fabric taking place of leather belts. M. Asipoff.
 488,329. (December 19, 1917.) Resilient wheel without pneumatic tire. C. Dakaradi.

NEW ZEALAND. ISSUED OCTOBER 31, 1918.

- 40,158. Hypodermic injector with rodless piston of rubber. R. G. J. McEntire, 23 Pembroke Park, Dublin, Ireland.
 40,507. Billiard-table cushion-support. F. A. Alcock, 155 Elizabeth street, Melbourne, Victoria.

TRADE MARKS. THE UNITED STATES.

- N**O. 105,529. The words **REPAIRED** and **GOODS**. United States Rubber Co., New York City.
 107,861. The word **SPEEDWELL**, shoes and boots of leather, canvas, rubber and fiber. R. C. H. Gormston, Co., Richmond, Ky.
 110,383. The word "USCO" in script letters—gloves—boots and shoes which are made of rubber, and rubber heels. United States Rubber Co., New Brunswick, N. J., and New York City.
 111,232. Representation of a shield upon which is superimposed a double outlined triangle with a pair of scales within and the letters "C" and "H" to the right and left of the apex—boots and shoes of leather, textile fabrics, rubber or felt, and soles of leather, textile, and rubber. Von Der Heyde & John, New York City.
 111,483. Representation of a Maltese cross bearing the words **TOP NORCH** and the representation of a deeply notched tree-trunk—rubber boots and shoes of all kinds, insoles, spats, and over-shoes made of a combination of rubber and cotton or woaden fabric. The Beacon Falls Rubber Shoe Co., Beacon Falls, Conn.
 111,554. The words **RUB** and **GLO** respectively above and below the letter "R"—compound for coloring rubber and rubber preservative. F. W. Tunnell & Co., Inc., Philadelphia, Pa.
 112,242. The word **RUSCO**—woven fan-belts. The Russell Manufacturing Co., Middletown, Conn.
 112,563. Representation of an elephant coming through a cross-section of a tire—rubber tires for vehicles. Farley & MacNeill, Boston, Mass.
 112,966. The word **ALFALO** in script letters—men's shoes of leather and leather substitutes. Elbert S. Torrey, Boston, Mass.
 112,989. Representation of ovals falling out of an open money-bag outlined against a black disk—boots and shoes of leather, canvas, or fabric. W. H. McElwain Co., Boston, Mass.
 113,063. An outlined geometric figure—mechanical rubber goods including rubber and fabric hose, packing, tires, inner tubes, and rubber belting. New Jersey Car Spring & Rubber Co., Inc., Jersey City, N. J.
 113,064. The word **CAMPBELL**—mechanical rubber goods including rubber and fabric hose, packing, tires, inner tubes, and rubber belting. New Jersey Car Spring & Rubber Co., Inc., Jersey City, N. J.

THE DOMINION OF CANADA.

- 23,722. Representation of a star-billiard and pocket-billiard balls. The Brunswick-Balke-Clendenen Co., Chicago, Ill., U. S. A.
 23,731. The letters **T** and **G**—engine packings and mechanical rubber goods. Thomson-Gordon, Limited, Hamilton, Ont.
 23,757. The word **SHELLBAC** and the representation of a turtle—rain-boats. Hubert Douglas Groves, 15 Station Road, Huddersfield, Yorkshire, England.
 23,774. The letters **B. B. C.**—billiard and pocket-billiard balls. The Brunswick-Blake-Collender Co., Chicago, Ill., U. S. A.
 23,811. The words **KOR-KER**—puncture sealing compositions for pneumatic tires. Puncture Care Sales Co., Newark, N. J., U. S. A.
 23,866. Representation of the head and shoulders of a gladiator with Roman helmet—rubber belting, hose, packings, mechanical rubber goods, automobile and motorcycle tires and accessories, bicycle tires or other flexible materials, and rubber boots and shoes. Gatta Perkin & Rubber, Limited, Toronto, Ont.

NEW ZEALAND. TO AMERICANS.

- 14,714. Representation of a kneeling monkey chopping off end of tail on jar labeled **MOCO MONKEY GRIP**, beside the name of the concern and beneath the words "It's a long tale, but I'll cut it short. Moco Monkey Grip is the best"—self-vulcanizing cold patch of rubber for automobile and motorcycle inner and outer tubes and casings. Moco Laboratories, Inc., 9 South Dewey street, Oklahoma City, Okla., U. S. A. (A. C. Wilshire, 219 Clarence street, Sydney.)
 14,715. Representation of two monkeys swinging from the first and last letters of the word **MONKEY** above them, with the words **MONKEY GRIP** beneath. Same as No. 14,714.

THE FRENCH REPUBLIC. TO AMERICANS.

- 25,650. The word **RALSTON** pierced from left to right by an arrow—shoes of leather, fabric, cloth, and rubber. Churchill & Alden Co., Brockton, Mass., U. S. A.
 25,658. Representation of a tire through which is thrust an arm and hand, with a rubber shoe, the hand holding a surgeon's knife—rubber heels, soles, and tires. The Miller Rubber Co., Alton, O.
 25,659. Representation of conventionalized Brownie-type mermaid figure in relief, with the words **IRVING WATZGS**—rubbers, shoes, waterproofs, etc. Goldman Costume Co., 16 West 33d street, New York City, U. S. A.
 25,687. The word **RINEX**—soles of rubber, fiber, or other materials for boots, shoes, and the like. United States Rubber Co., 1790 Broadway, New York City, U. S. A.
 25,688. The word **SPRING-STEP**—rubber heels for boots and shoes. Revere Rubber Co., 335 Valley street, Providence, R. I., U. S. A.

TO CANADIANS.

- 25,637. Representation of seal of Dominion Rubber Co., Limited—goods made wholly or partly of rubber or of rubber combined or mixed with other materials, such as rubber shoes, tires, tubes, waterproof fabrics, gloves, belts, balloons, druggists' sundries, mechanical goods, etc. Dominion Rubber Co., Limited, Montreal, Que., Canada.
 25,638. Same as No. 25,637.
 25,639. Representation of an anchor and the words **ANCHOR RUBBER CO.** within a circle of rubber—goods same as No. 25,637. Canadian Consolidated Rubber Co., Limited, Montreal, Que., Canada.
 25,640. The words **FOOT** rubber goods same as No. 25,637. Canadian Consolidated Rubber Co., Limited, Montreal, Que., Canada.
 25,641. Representation of a flying eagle with the words **GOODYEAR'S RUBBERS** above and below, respectively—rubber goods same as No. 25,637. Canadian Consolidated Rubber Co., Limited, Montreal, Que., Canada.
 25,642. Representation of seal of Canadian Rubber Co. of Montreal over the words **TRADE MARK** and **JACQUES CARTIER**—rubber goods same as No. 25,637. Canadian Rubber Co. of Montreal, Limited, Montreal, Que., Canada.
 25,643. Representation of a maple leaf bearing the words **THE MAPLE LEAF BRAND**—rubber goods same as No. 25,637. The Maple Leaf Rubber Co., Limited, Port Dalhousie, Ont., Canada.
 25,644. Representation of crossed snow-shoes with superimposed shield bearing the words **GRANBY RUBBER CO., LIMITED**—rubber goods same as No. 25,637. Granby Rubber Co., Limited, Granby, Que., Canada.
 25,645. Representation of head of moose over the words **THE MERCHANTS RUBBER CO., LIMITED**—rubber goods same as No. 25,637. The Merchants Rubber Co., Limited, Kitchener, Ont., Canada.

DESIGNS.

THE UNITED STATES.

- N**O. 52,568. Hose. Term 14 years. Patented October 15, 1918. B. V. Hallgren, Trenton, N. J.
 52,569. Hose. Term 14 years. Patented October 15, 1918. B. V. Hallgren, Trenton, N. J.
 52,570. Hose. Term 14 years. Patented October 15, 1918. B. V. Hallgren, Trenton, N. J.
 52,571. Hose. Term 14 years. Patented October 15, 1918. B. V. Hallgren, Trenton, N. J.
 52,573. Resilient tire. Term 14 years. Patented October 15, 1918. H. H. Hewitt, Buffalo, N. Y.
 52,582. Corset. Term 14 years. Patented October 15, 1918. A. Malin, assignor to Lane Bryant, Inc.—both of New York City.
 52,594. Wheel with twin tires. Term 14 years. Patented October 15, 1918. G. Walther, Dayton, O.
 52,616. Hot-water bottle, syringe bag, etc. Term 14 years. Patented October 15, 1918. J. J. Miller, assignor to The Faultless Rubber Co.—both of Ashland, O.



52,573

THE DOMINION OF CANADA.

- 4,447. Golf ball. Patented August 1, 1918. Canadian Consolidated Rubber Co., Limited, Montreal, Que.

CEYLON RUBBER EXPORT TAX REDUCED.

Ceylon companies have for some time past been taxed to the amount of 7½ rupee cents per pound of rubber. Following the change of policy in Malaya, the Ceylon Government has now decided to reduce this tax to one of three rupee cents per pound. The old tax meant 1¼d. per pound, and the concession is a welcome one, particularly in connection with the elimination of the war risk insurance on cargoes.

Review of the Crude Rubber Market.

NEW YORK.

QUIETNESS characterized the market for the first half of the month, although there was a fair demand from manufacturers. Spot offerings were light, and the market tone was firm. At the middle of the month the announcement was made that all restrictions upon the quantities of crude rubber that may be imported from overseas were at an end and that import licenses would henceforth be granted regardless of quantities involved. It was also learned that the government option prices were withdrawn and that no undertaking as to maximum values would be required in the future.

Consumers have shown little interest in the situation, buying only small quantities. During the second half of the month there was very little stock of any kind on the spot, and, in fact, no island coarse, caucho ball or cametá at all. Manufacturers will hardly be in the market for appreciable quantities for the next two weeks at least.

The report that the Netherlands East Indies Government had placed an embargo on rubber and jelutong exports from the Dutch East Indies was without foundation, but the exports have been placed under government control.

On December 20, restrictions as to the quantity of balata, gutta percha, gutta siak, and jelutong for shipment from overseas were removed. Official option prices were withdrawn and from now on no undertaking as to maximum prices will be needed. The only restrictions abolished are those affecting shipments from primary or overseas markets. Applicants for import licenses will, however, still have to conform to the other existing import regulations.

PLANTATIONS.—On December 1, latex was 63 cents and ribs were 61½ cents. Quotations, for arrival, were, on December 26, 1918: latex, 54 cents; ribs 52½; January-February shipments, latex, 52 cents, ribs 51 cents.

PARÁS.—On December 26, prices were: upriver fine 61 cents (a month ago 66 to 68 cents); upriver coarse, 35½ cents (a month ago 38 to 40 cents); upper caucho ball, 35 cents (a month ago 38 to 40 cents); cametá, 24 cents (a month ago 26 to 28 cents).

NEW YORK SPOT QUOTATIONS.

Following are the New York spot quotations, one year ago, allocation and free rubber prices a month ago and spot prices on December 26:

PLANTATION HEVEA—	Spot, Jan. 1, 1918.	Allocated, Dec. 1, 1918.	Free, Dec. 1, 1918.	Dec. 26, 1918.
First latex crêpe.....	55	54	61½	54
*Hevea first crêpe.....	55	54	61½	54
Amber crêpe No. 1... 47	47	52	57	48
Amber crêpe No. 2... 45	45	52	57	47
Amber crêpe No. 3... 45	45	52	57	46
Amber crêpe No. 4... 44	44	52	57	45
Brown crêpe, thick clean 45	44	53	53	45
Brown crêpe, thin clean 45	42	53	47	45
Brown crêpe, thin specky 42	38	49	40	40
Brown crêpe, rolled... 33	34	43	35	35
Smoked sheet, ribbed standard quality... 54	54½	52	60½	52
*Hevea ribbed smoked sheet, standard quality... 51	51	50	51	51
*Hevea plain or smooth smoked sheets standard quality... 49	50	50	49	49
*Hevea unsmoked sheets standard quality... 49	50	50	49	49
Colombo scrap No. 1... 38	38	38	38	38
Colombo scrap No. 2... 36	36	36	36	36

BRAZILIAN PARAS—

Upriver fine.....	61	58	64	61
Upriver medium.....	56	57	55	55
Upriver coarse.....	41	32	38	35
Upriver weak fine.....	50	51	51	51
Upper caucho ball.....	40½	41	33	35

	Spot, Jan. 1, 1918.	Allocated, Dec. 1, 1918.	Free, Dec. 1, 1918.	Dec. 26, 1918.
BRAZILIAN PARAS—				
Islands fine.....	52	47	53	53
Islands medium.....	45	42	45	45
Islands coarse.....	27	21	27	23½
Cametá.....	27	23	27	24
Lower caucho ball.....	39	31	34	34
Peruvian fine.....	58	58	58	56
Tapajos fine.....	57	58	58	57

AFRICANS—

Niger flake, prime.....	48	25	28	28
" paste.....	48	25	28	24
Benguella, extra No. 1, 28%.....	48	30	33	**33
Benguella, No. 2, 32½%.....	48	26	29	**29
Congo prime, black.....	50	45	48	**48
" upper.....	48	45	48	**48
Congo prime, red upper Rio Nunez ball.....	48	45	48	**48
Rio Nunez sheets and strings.....	48	45	48	**48
Conakry niggers.....	48	45	48	**48
Masai sheets and strings.....	48	45	48	**48

CENTRALS—

Corinto scrap.....	40	36	39	37
Esmeralda sausage.....	39	40	39	36
Central scrap.....	37	35	39	35½
Central scrap a strip, 75 per cent.....	35	34	34	35
Central wet sheet, 25% Gayule, 20% guarantee.....	26	27	32	26
Gayule, dry.....	29	30	35	34

MANICOBAS—

Ceara negro heads.....	35	36	35	35
Ceara scrap.....	35	36	35	35
Manicoba (basis 30% loss washing and drying).....	34	34	34	**33
Manabeira thin sheet.....	31	31	31	**34

EAST INDIAN—

Assam crêpe.....	46	46	46	36
Assam onions.....	43	43	43	44
Penang block scrap.....	38	38	38	38

BALATA—

Block, Ciudad Bolivar.....	72	70	71	69
Colombia.....	53	58½	60	58
Panama.....	81	56½	58	57
Surinam sheet.....	83½	81	95	93
amber.....	83½	81	95	95

PONTIANAK—

Banjermassin.....	13½	14	14½	14½
Palembang.....	20½	21	18½	18½
Pressed block.....	20½	21	18½	18½
Sarawak.....	20½	21	18½	18½

GUTTA PERCHA—

Gutta Siak.....	21	21	23	24
Red Macassar.....	2.50	3.00	2.90	2.95

*Rubber Association of America nomenclature.

**Nominal.

RECLAIMED RUBBER.

There was a little activity noticed in the reclaimed-rubber market during the first part of the month, but the volume of business was small. Following the armistice and the subsequent removal of restrictions on crude and manufactured rubber, there was even less interest shown in reclaims and the market became very quiet. This condition is apparent at the present time in all markets for rubber supplies, but the expectation of activity early in the year is confident in many quarters. The prices on standard reclaims has not changed materially since last month.

NEW YORK QUOTATIONS.

DECEMBER 26, 1918.

Subject to change without notice.

Standard reclaims:			
Floating.....	35	40	40
Friction.....	35	40	40
Mechanical.....	12	13	13
Red.....	30	25	25
Shoe.....	15	15½	15½
Tire, auto.....	17½	18½	18½
Truck.....	13	13½	13½
White.....	24	25	25

PLANTATION RUBBER EXPORTS FROM JAVA

Item	September.		Nine Months Ended September 30.	
	1917.	1918.	1917.	1918.
United States	433,000	.....	2,091,000	1,659,000
Singapore	81,000	611,000	11,200,000	5,047,000
Other countries .....	.....	11,000	1,093,000	6,485,000
.....	4,000	.....	20,000	.....
.....	.....	.....	.....	354,000
Totals	1,341,000	822,000	14,404,000	14,219,000
.....
.....	598,000	326,000	8,344,000	7,508,000
.....	34,000	178,000	.....	124,000
.....	264,000	264,000	5,635,000	6,349,000
.....	6,000	232,000	247,000	238,000
Totals	1,341,000	822,000	14,404,000	14,219,000

GUTHRIE & CO., LIMITED, Singapore, report [November 7, 1918]:

The following was the course of values:

* computed in \$/\$. Currency

TO VANCOUVER, B. C.

DECEMBER 12. By the <i>Kokoi Maru</i> , from Singapore, via Yokohama:	
T. T. Johnstone & Co.	618,840
J. Littlejohn & Co.	75,600
Paci & Kelly	7,500
Grace & Co.	15,480
Canadian Consolidated Rubber Co. Limited	10,400
Miner Rubber Co. Limited	11,740
Various	1,027,000

SAN FRANCISCO.

DECEMBER 3. By the <i>Kokoi Maru</i> , from Yokohama:	
Robinson & Co.	15,480
F. R. Henderson & Co.	102,420
Stiles & Co.	2,160
DECEMBER 13. By the <i>Siberia Maru</i> , from Singapore:	120,060
United States Rubber Co.	1,029,060
DECEMBER 20. By the <i>Imperial</i> , from Yokohama:	
Stein, Hall & Co.	11,000

RUBBER IMPORTS AND EXPORTS AT BOSTON.

PORT OF THE DISTRICT OF MASSACHUSETTS—OCTOBER, 1918.

IMPORTS:	POUNDS.	VALUE.
Crude rubber:		
From—		
Chile	174,780	
Straits Settlements	246,557	87,134
Dutch East Indies	1,007,634	391,117
Totals	1,801,985	\$653,031
EXPORTS:		
Automobile tires:		
To—		
Newfoundland	\$89	
Bolivia:		
To—		
Newfoundland	\$835	
Rubber boots:		
To—		
France	3,419	\$13,335
England	7,135	
Newfoundland	1,404	3,347
Totals	7,568	\$13,717
Rubber shoes:		
To—		
Miquelon Island	63	\$59
Newfoundland	20,100	18,884
Totals	20,163	18,943

RUBBER STATISTICS FOR THE DOMINION OF CANADA.

The import and export figures by countries usually published in this table are withheld by the Canadian Government.

IMPORTS OF CRUDE AND MANUFACTURED RUBBER.

	1917	1918
	Pounds.	Value.
UNMANUFACTURED—		
Rubber and gutta percha, crude	948,170	\$557,841
casheou or india rubber...	398,434	64,138
Rubber recovered	2,915	2,322
Hard rubber, in sheets and rods	19,989	2,947
Rubber substitute	257,360	10,049
Rubber, powdered, and rubber or gutta percha waste	590	1,063
Rubber thread, not covered	1,027,000	1,126,100
Totals	1,622,448	\$673,527
Chicle	10,000	4,384

MANUFACTURED—dutiable:

	1917	1918
	Pounds.	Value.
Boots and shoes	\$28,937	\$13,126
Belting	7,516	20,235
Waterproof clothing	36,087	5,395
Hose, lined with rubber	11,135	9,059
Mats and matting	1,000	15,000
Tires of rubber for all vehicles	10,000	68,016
Rubber cement and all manufactures of india rubber and gutta percha	10,000	10,000
Hard rubber, unfinished, and tubes for fountain pens	1,000	909
Webbing, over one inch wide	10,000	24,806
Totals	\$40,051	\$249,127

IMPORTS—POUNDS. VALUE.

Druggists' sundries:		
To—		
Newfoundland	1147	
Cuba	538	
Total	6685	
Other rubber manufactures:		
To—		
Canada	\$19	
Newfoundland	405	
Cuba	17	
Total	\$441	

RUBBER IMPORTS AND EXPORTS AT NEW YORK.

IMPORTS.

UNMANUFACTURED—free:	POUNDS.	VALUE.
Crude rubber:		
From—		
Canada	5,636	\$1,732
Chile	120	70
Honduras	4,000	1,812
Nicaragua	1,200	600
Panama	4	101
Salvador	11,953	5,132
Peru	2,253	815,300
Colombia	60,540	21,755
Bolivia	2,002	1,201
British Guiana	2,843	2,227
Puerto Rico	9,520	2,285
Straits Settlements	1,496,600	602,888
British East Indies	117,600	17,808
Dutch East Indies	262,531	115,504
Philippine Islands	8,240	3,215
British West Africa	16,396	3,325
Totals	4,396,407	\$1,692,902
Latex (Pontianak):		
To—		
Straits Settlements	21,272	\$1,906
Bolivia:		
From—		
Panama	19,060	\$6,773
Trinidad	13,440	8,333
Colombia	53,345	21,534
Dutch Guiana	13,671	9,740
Totals	99,718	\$46,383
Reclaimed rubber:		
From—		
England	463,022	\$27,230
Panama	7,765	237
Newfoundland	5,000	360
Totals	470,787	\$27,767
Totals, unmanufactured	4,988,184	\$769,955

EXPORTS OF DOMESTIC MERCHANDISE.

October, 1918.

MANUFACTURED—	POUNDS.	VALUE.
Automobile tires:		
To—		
England	5535	
Costa Rica	70	
Guatemala	4,797	
Honduras	2,329	
Panama	3,087	
Salvador	13,009	
Mexico	15,001	
Newfoundland	10	
Barbados	1,434	
Jamaica	3,634	
Trinidad	5,291	
British West Indies	2,734	
Cuba	21,781	
Dutch West Indies	1,122	
French West Indies	2,802	
Haiti	422	
S. S. Domingo	3,152	
Argentina	6,555	
Brazil	32,419	
Chile	54,752	
Colombia	2,660	
Ecuador	2,762	
British Guiana	1,643	
Peru	23,221	
Venezuela	11,347	
China	4,089	
British East Indies	110	
Dutch East Indies	11,689	
Russia in Asia	8,806	
Turkey in Asia	17,067	
Australia	1,076	
British West Africa	25	
British South Africa	266,770	
Portuguese Africa	2,606	
Totals	\$381,587	
All other tires	\$13,538	
Belting	259,378	
Rubber boots	87,453	\$72,830
Rubber shoes	133,184	\$11,926
Druggists' sundries	22,161	
Other rubber manufactures	290,724	
Totals	\$1,070,557	

EXPORTS OF FOREIGN MERCHANDISE.

October, 1918.

UNMANUFACTURED—	POUNDS.	VALUE.
Bolivia	112,100	\$6,400
Totals exports	\$1,714,134	

EXPORTS OF DOMESTIC AND FOREIGN RUBBER GOODS.

August.

	1917.	1918.
	Produce of Canada.	Reexports of Foreign Goods.
Produce of Canada	\$497	\$1,508
Reexports of Foreign Goods	9,913	14,537
Total	25,065	416,740
Produce of Canada	\$9,657	\$10,611
Reexports of Foreign Goods	8,595	1,393
Total	2,383	16,511
Totals	\$106,110	\$462,171
Chicle	70,215	\$761,860
Totals	\$1,714,134	\$1,409

MONTHLY IMPORTATIONS OF CRUDE RUBBER INTO THE UNITED STATES.

	MONTHLY TOTALS	MONTHLY TOTALS
	PARA. CAN. GROSS.	GREEN. MEXICO. GROSS.
January	710	140
February	9,715	68
March	11,000	120
April	11,000	18
May	11,000	18
June	11,000	18
July	11,000	18
August	11,000	18
September	11,000	18
October	11,000	18
November	11,000	18
December	11,000	18
Totals	11,000	18

(From figures and files in the Rubber Association of America, Boston.)

EXPORTS OF INDIA RUBBER MANUFACTURES FROM THE UNITED STATES DURING THE MONTH OF OCTOBER, 1918. (BY COUNTRIES).

EXPORTED TO—	Belting, Hose and Packing.		Boots.		Shoes.		Druggists' Rubber Sundries.		Automobile.		Tires.		All Other.		All Other Manufactures of India Rubber.		Total Value.	
	Pounds.	Value.	Pairs.	Value.	Pairs.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.		
Denmark	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
France	.....	.....	87,033	\$371,475	44,000	\$55,728	.....	.....	.....	.....	.....	.....	.....	.....	88,089	111,896	\$39,099
Iceland and Faero Islands	800	\$80	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	397	523	600
Italy	.....	.....	.....	.....	.....	.....	1,242	\$525	.....	.....	.....	.....	.....	.....	12,390	13,599	14,124
Norway	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1,422	\$300	529	765	1,065
Portugal	.....	.....	.....	.....	.....	.....	.....	.....	350	\$537	.....	.....	.....	.....	.....	.....	537
Spain	.....	.....	.....	.....	.....	.....	219	1,153	.....	.....	.....	.....	.....	.....	250	256	1,409
England	2,448	1,719	2,748	7,135	.....	.....	.....	.....	434	535	.....	.....	.....	.....	54,009	65,467	74,856
Totals, Europe	3,248	\$1,799	89,781	\$378,610	44,000	\$55,728	1,461	\$1,678	784	\$1,072	1,422	\$300	157,999	\$197,235	.....	.....	\$636,422
NORTH AMERICA:																		
Bermuda	.....	.....	.....	.....	154	\$108	49	\$101	.....	.....	.....	.....	.....	.....	423	\$277	\$486
British Honduras	.....	.....	.....	.....	1,782	1,173	100	89	24	\$54	.....	.....	.....	.....	.....	.....	1,316
Canada	46,128	\$34,373	1,267	\$4,714	9,560	12,293	27,683	24,001	24,040	27,619	3,194	\$1,813	200,823	147,801	.....	.....	252,611
Costa Rica	1,886	798	.....	.....	.....	.....	.....	.....	60	70	120	140	110	159	1,167	.....	1,167
Guatemala	5,210	3,375	.....	.....	.....	.....	264	343	1,749	2,877	793	184	1,981	1,898	8,677	.....	8,677
Nicaragua	1,880	849	42	98	811	574	86	117	1,493	949	.....	.....	178	228	2,915	.....	2,915
Honduras	1,362	791	.....	.....	1,524	1,496	111	103	258	34	.....	.....	1,135	1,846	4,584	.....	4,584
Panama	482	538	12	61	468	509	393	309	3,620	3,395	2,991	1,346	2,240	1,735	7,893	.....	7,893
Salvador	1,856	947	2,726	3,409	1,560	1,371	5,727	5,727
Mexico	95,931	\$3,400	50	312	1,981	2,230	1,367	1,817	43,970	55,419	4,992	3,707	64,936	12,567	129,452	.....	129,452
Miquelon, Langley, etc.	.....	.....	.....	.....	82	59	.....	.....	.....	.....	.....	.....	90	78	137	.....	137
Newfoundland and Labrador	2,683	1,625	3,156	9,078	20,100	18,824	186	207	789	874	.....	.....	2,449	2,583	33,391	.....	33,391
West Indies—	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
British:	.....	.....	.....	.....	81	\$85	14	\$26	1,284	\$1,434	.....	.....	.....	.....	95	\$30	\$1,575
Barbados	4,041	\$1,509	.....	.....	528	805	59	76	2,802	3,696	.....	.....	.....	.....	282	411	6,497
Jamaica	1,792	1,169	.....	.....	1,296	523	1,636	2,132	5,209	5,291	80	\$243	2,647	1,420	10,778	.....	10,778
Trinidad and Tobago	726	602	.....	.....	282	268	2	3	3,736	1,400	141	135	689	249	4,657	.....	4,657
Other British West Indies	72,559	39,596	.....	.....	8,233	4,925	3,486	5,633	139,233	104,443	4,512	2,500	28,568	18,786	175,666	.....	175,666
Cuba	72,559	39,596	.....	.....	.....	.....	.....	.....	107	1,122	72	26	1,112	639	1,313	.....	1,313
Danish West Indies	88	23	.....	.....	.....	.....	122	113	1,803	2,802	.....	.....	73	24	2,962	.....	2,962
Dutch West Indies	185	278	.....	.....	1	1	.....	.....	3	3	.....	.....	9	9	715	.....	715
French West Indies	160	117	.....	.....	.....	.....	10	3	2,070	3,152	808	172	768	699	4,143	.....	4,143
Haiti	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Dominican Republic	1,738	1,311	.....	.....	.....	.....	45	61	5,636	6,699	1,174	474	422	473	9,018	.....	9,018
Totals, North America	138,614	\$141,515	4,527	\$14,263	46,853	\$43,973	35,625	\$35,149	241,996	\$227,475	18,877	\$10,740	307,080	\$193,067	.....	.....	\$666,181
SOUTH AMERICA:																		
Argentina	929	\$513	.....	.....	.....	.....	135	\$337	6,802	\$8,370	.....	.....	3,828	\$4,379	.....	.....	\$13,599
Bolivia	75	350	.....	.....	.....	.....	23	2	1,471	1,388	.....	.....	16	27	.....	.....	420
Brazil	9,565	\$5,502	.....	.....	3,474	\$2,859	973	2,816	31,224	32,419	.....	.....	2,932	5,323	48,919	.....	48,919
Chile	24,338	18,541	98	\$553	.....	.....	2,261	2,667	43,635	55,198	5,274	6,182	13,309	9,331	92,472	.....	92,472
Colombia	4,135	2,865	.....	.....	373	304	.....	.....	5,830	5,428	.....	.....	1,726	1,537	10,544	.....	10,544
Ecuador	369	299	.....	.....	.....	.....	.....	.....	2,388	2,878	.....	.....	947	410	.....	.....	.....
Costa Rica	269	.....	.....	.....	.....	.....	.....	.....	800	1,643	.....	.....	1,895	1,244	4,880	.....	4,880
Dutch Guiana	33	35	18	57	3,300	1,361	40	36	800	1,643	.....	.....	1,230	935	1,246	.....	1,246
Dutch Guiana	23	35	.....	.....	.....	.....	249	190	.....	.....	30	86	1,230	935	1,246	.....	1,246
Peru	7,708	3,591	.....	.....	312	489	305	308	17,524	24,423	.....	.....	3,374	2,694	31,505	.....	31,505
Uruguay	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1,462	1,207	1,210	.....	1,210
Venezuela	797	710	.....	.....	.....	.....	358	496	8,868	11,347	25	114	1,056	1,407	14,074	.....	14,074
Totals, South America	48,429	\$32,945	116	\$610	7,459	\$5,013	4,381	\$6,949	117,071	\$141,706	6,276	\$6,792	30,969	\$28,181	.....	.....	\$222,196
ASIA:																		
China	14,552	\$9,076	.....	.....	123	\$106	679	\$1,286	9,704	\$11,613	418	\$831	5,227	\$6,263	.....	.....	\$29,175
Chosen	390	157	.....	.....	54	62	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
British India	20,267	6,283	.....	.....	144	231	2,434	1,522	3,466	4,144	662	576	4,094	5,529	18,275	.....	18,275
British India	20,267	6,283	.....	.....	144	231	2,434	1,522	3,466	4,144	662	576	4,094	5,529	18,275	.....	18,275
Straits Settlements	.....	.....	28	35	.....	.....	.....	.....	976	2,400	.....	.....	500	1,500	.....	.....	.....
Other British East Indies	.....	.....	.....	.....	3	6	474	557	34,919	38,592	1,616	1,158	8,828	11,547	55,381	.....	55,381
Dutch East Indies	2,427	1,521	.....	.....	.....	.....	.....	.....	.....	.....	22	22	104	113	1,920	.....	1,920
French East Indies	2,458	1,964	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hongkong	110,198	46,128	516	450	17,214	16,584	174	386	14,698	16,189	1,250	1,600	6,309	5,781	87,118	.....	87,118
Japan	.....	.....	2	19	12	35	.....	.....	6,484	8,806	500	1,439	126	32	10,331	.....	10,331
Russia in Asia	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Siam	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Turkey in Asia	.....	.....	.....	.....	.....	.....	.....	.....	1,355	1,067	.....	.....	248	139	1,206	.....	1,206
Totals, Asia	150,814	\$67,198	570	\$576	17,781	\$17,376	3,771	\$3,779	78,992	\$94,823	4,468	\$5,626	28,347	\$32,876	.....	.....	\$222,254
OCEANIA:																		
Australia	10,935	\$6,547	192	\$499	5,307	\$3,988	1,667	\$1,958	21,130	\$29,047	.....	.....	3,310	\$3,425	.....	.....	\$45,464
New Zealand	1,771	838	9	35	.....	.....	.....	.....	39,014	38,835	.....	.....	1,858	2,167	41,865	.....	41,865
Other British Oceania	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
French Oceania	318	198	.....	.....	.....	.....	13	23	2,046	2,615	312	\$242	555	557	3,635	.....	3,635
German Oceania	.....	.....	.....	.....	.....	.....	.....	.....	1,056	1,552	.....	.....	295	357	1,919	.....	1,919
Philippine Islands	9,069	6,075	12	49	59,420	46,754	626	999	84,044	123,438	6,617	3,013	15,128	23,125	203,453	.....	203,453
Totals, Oceania	22,113	\$13,658	213	\$583	64,727	\$50,742	2,308	\$2,981	147,490	\$195,727	6,929	\$3,255	21,146	\$23,621	.....	.....	\$296,577
AFRICA:																		
British West Africa	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	25	\$25	.....	.....	.....	.....	\$25
British South Africa	271,626	\$124,652	1,956	\$8,188	73,193	\$45,719	1,751	\$1,956	207,391	\$266,770	3,399	\$2,948	30,530	\$14,913	.....	.....	\$465,146
British East Africa	.....	.....	.....	.....	324	251	.....	.....	.....	.....	.....	.....	1,018	879	.....	.....	251
French Africa	.....	.....	.....	.....	.....	.....	.....	.....	1,120	1,606	.....	.....	.....	.....	.....	.....	.....
Portuguese Africa	99,044	22,456	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	25,062
Totals, Africa	370,670	\$147,108	1,956	\$8,188	73,517	\$45,970	1,751	\$1,956	208,536	\$269,401	3,399	\$2,948	31,538	\$15,792	.....	.....	\$491,363
Total	833,888	\$404,223	97,163	\$402,830	254,427	\$218,802	49,297	\$52,492	794,869	\$930,204	41,371	\$29,661	577,079	\$496,782	.....	.....	\$2,534,994

(Compiled by the Bureau of Foreign and Domestic Commerce, Department of Commerce, Washington, D. C.)

RUBBER STATISTICS FOR ITALY.

IMPORTS OF CRUDE AND MANUFACTURED RUBBER.

Four Months Ended April 30.

	1917.		1918.	
	Quintals. ¹	Lire. ²	Quintals.	Lire.
UNMANUFACTURED—				
India rubber and gutta percha—raw and reclaimed:				
From—				
Great Britain	2,944		3,363	
India and Ceylon	3,702		1,263	
Straits Settlements	144		8,860	
French Africa	184		1,743	
Belgian Congo	632		61	
Brazil	9,355		1,870	
Other countries	154		1,141	
Totals	17,115	18,403,500	18,301	16,470,900
Rubber scrap	1,457	145,700	168	16,800
India rubber and gutta percha—threads:				
From—				
Great Britain	52		34	
United States	32		56	
Other countries	5			
Totals	89	178,000	90	180,000
India rubber and gutta percha—sheets:				
Cut sheets	2	3,500		
Other kinds, including hand rubber	36	31,320	13	11,310
India rubber and gutta percha—tubes:				
From cut sheets	1	1,850		
Elastic fabric	31	21,700	68	47,600
Other forms	6	4,800		
Belting	167	4,800	255	204,000
Rubber-graded fabrics—pieces:				
For carding combs	147	150,675	78	79,950
Other forms:				
From—				
Great Britain	24		3	
Other countries	11			
Totals	35	45,500	3	3,900
Boots and shoes—pairs:				
From—				
Great Britain	5,709		12,356	
United States	8,334		193	
Other countries	97		284	
Totals	14,140	91,910	12,833	83,415
Elastic webbing:				
From—				
France	68		45	
Great Britain	24		4	
Other countries	11			
Totals	103	175,100	59	100,300
Clothing and articles for travel.	4	9,600		
Manufactures of india rubber and gutta percha—n. e. s.:				
From cut sheets	31	68,200	4	8,800
Elastic fabric:				
From—				
France	18		2	
Great Britain	191		305	
Other countries	29		5	
Totals	238	226,100	312	296,400
Tires and tubes:				
From—				
France	780		985	
Great Britain	721		244	
Other countries	66			
Totals	1,567	2,444,520	1,229	1,917,240
MANUFACTURED—				
Other rubber manufactures:				
From—				
France	228		1,174	
Great Britain	483		425	
United States	173		111	
Other countries	4		1	
Totals	890	712,000	1,711	1,368,800
Total imports		19,847,575		20,789,415

EXPORTS OF CRUDE AND MANUFACTURED RUBBER.

Four Months Ended April 30.

	1917.		1918.	
	Quintals.	Lire.	Quintals.	Lire.
UNMANUFACTURED—				
India rubber and gutta percha—raw and reclaimed:				
To—				
Spain	330		585	
United States	1,470		115	
Totals	1,800	540,000	700	210,000

Four Months Ended April 30.

	1917.		1918.	
	Quintals.	Lire.	Quintals.	Lire.
MANUFACTURED—				
India rubber and gutta percha—threads:				
To—				
France	32		18	
Great Britain	28			
Spain	27			
Switzerland	16			
Argentina	16			
Other countries	4			
Totals	123	233,700	18	34,200
India rubber and gutta percha—sheets:				
Cut sheets	4	6,800	6	10,200
Elastic fabric	13	7,800	20	12,000
Insulated wire	1	350		
Other forms, comprising hard rubber	40	34,000	20	17,000
India rubber and gutta percha—tubes:				
From cut sheets			3	5,700
Elastic fabric	78	50,700	86	53,900
Other forms	122	91,500	64	48,000
Belting	8	5,760	35	25,200
Rubber-graded fabrics—pieces	97	97,000	33	38,000
Elastic webbing:				
To—				
France	6		3	
Greece	18		74	
Spain	29		3	
Switzerland	113		20	
Egypt	38		43	
Argentina	122		70	
Brazil	236		15	
Chile	29		7	
Cuba	31		20	
Other countries	48		24	
Totals	660	1,056,000	262	419,200
Clothing and articles for travel.	25	57,500	3	6,900
Manufactures of rubber and gutta percha—n. e. s.:				
From cut sheets:				
To—				
Great Britain	3			
Argentina	18		39	
Uruguay	8		2	
Other countries	1			
Totals	30	60,000	45	90,000
Elastic fabric	54	48,600	57	51,300
Tires and tubes:				
To—				
France	398		190	
Great Britain	11,209		971	
Spain	1		81	
Switzerland	300		7	
India and Ceylon	494			
Dutch East Indies	159		441	
Straits Settlements	222			
Australia	199			
Argentina	1,592		4	
Brazil	716		434	
Other countries	228		244	
Totals	15,518	9,635,850	2,365	2,447,775
Other manufactures:				
To—				
France	101		70	
Great Britain	94		86	
Spain	11		7	
Switzerland	50		109	
Egypt	5		21	
Argentina	205		31	
Brazil	83		17	
Uruguay	35		8	
Other countries	69		53	
Totals	652	586,800	404	363,600
Total exports		12,512,360		13,814,975

¹A quintal = 220.46 pounds.²A lira = \$0.191.

UNITED KINGDOM RUBBER STATISTICS.

The import and export figures by countries usually published in this table are withheld by the British Government.

IMPORTS.

October.

	1917.		1918.	
	POUNDS.	£	POUNDS.	£
UNMANUFACTURED—				
Crude rubber	9,590,200	1,200,170	4,282,200	482,581
Waste and reclaimed rubber	156,800	4,582	1,600	32
Gutta (Bakely)	561,600	64,561	997,600	186,169
Totals	10,308,600	1,269,283	5,283,400	668,882

MANUFACTURED	October		1918	
	POUNDS	£	POUNDS	£
Rubber and scrap, <i>divided parts</i>	7,188	12,236	1,480	6,690
Waterproof clothing.....	.....	215	.....	.....
Automobile tires and tubes.....	.....	89,322	.....	10,530
Motorcycle tires and tubes.....	.....	2,527	.....	16
Bicycle tires and tubes.....	.....	1,538	.....	1,533
Insulated wire.....	.....	.....	.....	.....
Totals.....	7,188	106,203	1,480	78,774

EXPORTS.				
Waste and reclaimed rubber.....	1,180,400	24,603	249,203	6,917
MANUFACTURED				
Waterproof clothing.....	.....	56,747	.....	36,968
Boots and shoes, <i>divided parts</i>.....	.....	10,536	5,943	9,218
Insulated wire.....	.....	5,066	.....	5,473
Submarine cables.....	.....	42,437	.....	2,146
Carriage tires and tubes.....	.....	11,537	.....	15,228
Automobile tires and tubes.....	.....	120,045	.....	137,523
Motorcycle tires and tubes.....	.....	4,751	.....	10,241
Bicycle tires and tubes.....	.....	26,688	.....	22,522
Other manufactures of india rubber.....	.....	141,380	.....	117,723
Totals.....	9,384	419,187	5,943	357,044

EXPORTS—FOREIGN AND COLONIAL.

UNMANUFACTURED	1917		1918	
	POUNDS	£	POUNDS	£
Crude rubber.....	8,286,000	1,055,030	2,521,700	289,847
Waste and reclaimed rubber.....	22,200	.....	.....	.....
Gutta percha.....	41,400	5,033	2,100	438
Totals.....	8,349,600	1,060,063	2,524,476	290,275

MANUFACTURED				
Boots and shoes, <i>divided parts</i>	61	313	.....	.....
Waterproof clothing.....	.....	16	.....	.....
Insulated wire.....	.....	5,264	.....	.....
Carriage tires and tubes.....	.....	13,773	.....	10
Automobile tires and tubes.....	.....	43	.....	26
Motorcycle tires and tubes.....	.....	.....	.....	.....
Totals.....	61	19,495	.....	36

LONDON AND LIVERPOOL RUBBER STATISTICS.

The import and export figures by countries usually published in this table are withheld by the British Government.

UNMANUFACTURED	1917		1918	
	POUNDS	£	POUNDS	£
Crude rubber:				
At.....	4,187,400	526,621	1,690,100	193,326
Liverpool.....	4,885,500	602,306	2,253,600	355,704
Totals.....	9,072,900	1,128,927	3,943,700	449,020
Waste and reclaimed rubber:				
At.....	25,700	669	3,600	32
Liverpool.....	112,700	3,501	.....	.....
Totals.....	137,900	4,170	3,600	32

EXPORTS.				
Waste and reclaimed rubber:				
From.....	.....	.....	.....	.....
London.....	401,600	8,487	233,400	6,315
Liverpool.....	504,500	11,692	4,800	172
Totals.....	906,100	20,179	237,200	6,487

REEXPORTS.				
Crude rubber:				
From.....	.....	.....	.....	.....
London.....	3,308,300	414,195	2,168,300	254,104
Liverpool.....	3,729,900	509,008	302,200	29,278
Totals.....	7,038,200	923,206	2,470,500	283,382

THE MARKET FOR RUBBER SCRAP.
NEW YORK.

THE upward tendency has not developed further strength, but there has been very little sagging during the month, and as so many commodities have moved downward during the last few weeks, scrap dealers may have cause for thankfulness, if not for jubilation. There is great satisfaction over the fact that the Government no longer places any restrictions on the use of rubber by manufacturers. While, of course, crude-rubber men also have reason to be glad for that, the value of reclaimed rubber is so well established that scrap dealers expect both better prices and more business within the next few weeks.

BOOTS AND SHOES. A very quiet market at 87½ cents to 9 cents, delivered mill.

INNER TUBES.—Scarcely any movement at all, but quotations on all grades one-quarter or one-half cent higher.

MECHANICALS.—Transactions purely nominal.

TIRES.—Sales small and hard to make, prices unchanged.

NEW YORK QUOTATIONS FOR CARLOAD LOTS DELIVERED.

DECEMBER 26, 1918.

Prices subject to change without notice.

BOOTS AND SHOES.				
Arctic tops.....	.....	.....	\$0.011 @	.....
Boots and shoes.....	.....	.....	.08½ @	.09
Trimmed arctic.....	.....	.....	.07½ @	.....
Untrimmed arctic.....	.....	.....	.06½ @	.....
HARD RUBBER.				
Battery jars, black compound.....	.....	.....	*.02 @	.....
No. 1, bright fracture.....	.....	.....	.25 @	.26
INNER TUBES.				
No. 1, old packing.....	.....	.....	.22½ @	.23
No. 2.....	.....	.....	.11½ @	.12
Red.....	.....	.....	.11½ @	.....
MECHANICALS.				
Black scrap, mixed, No. 1.....	.....	.....	.04½ @	.....
No. 2.....	.....	.....	.04½ @	.....
Car springs.....	.....	.....	.04½ @	.....
Hells.....	.....	.....	.04 @	.....
Horse-shoe pads.....	.....	.....	.04½ @	.....
Hose, air-brake.....	.....	.....	*.05½ @	.....
Fire, cotton lined.....	.....	.....	*.02½ @	.....
garden.....	.....	.....	*.02½ @	.....
Insulated wire stripping, free from fiber.....	.....	.....	.04 @	.....
Mattings.....	.....	.....	.01½ @	.....
Packing.....	.....	.....	.01½ @	.....
Red scrap, No. 1.....	.....	.....	.09½ @	.10
No. 2.....	.....	.....	.07½ @	.....
White scrap, No. 1.....	.....	.....	.13 @	.....
No. 2.....	.....	.....	*.09 @	.....
TIRES.				
PNEUMATIC:				
Auto peelings, No. 1.....	.....	.....	*.11½ @	.12
No. 2.....	.....	.....	.06½ @	.06¾
Bicycle.....	.....	.....	.04½ @	.....
Standard, white auto.....	.....	.....	.04 @	.....
Standard mixed auto.....	.....	.....	.05 @	.....
Striped, unguaranteed.....	.....	.....	*.03½ @	.....
White, G. & G. M. & W. and U. S.....	.....	.....	*.05½ @	.05¾
SOLID.				
Carriage.....	.....	.....	.04½ @	.....
Irony.....	.....	.....	.01¾ @	.02
Truck.....	.....	.....	.05 @	.05¾

*Nominal

THE MARKET FOR COTTON AND OTHER FABRICS.
NEW YORK.

THE total production of cotton in the United States for 1918-1919 is now estimated by the Department of Agriculture at 5,595,529,000 pounds—linters not included—equivalent to 11,700,000 bales. In 1917, 11,302,375 bales had been produced, and in 1916, 11,449,930 bales. This year's production thus exceeds last year's by 398,000 bales. The maximum prices and restrictions on cotton fabrics and manufacture enforced by the pricing committee of the War Industries Board end January 1, 1919, when the Board itself goes out of existence. No part of the stocks of cotton goods purchased by the Government will be sold in the open market, which would disturb the cotton goods market. The greater part of the stocks will be used for European relief, and some will be sold back to the manufacturers.

Since December 20, 1918, the following commodities are no longer on the export conservation list: Egyptian cotton, airplane cotton duck, cotton liners, rubberized silk suitable for use in the manufacture of aircraft and silk shapard.

EGYPTIAN COTTON.—The War Trade Board announces that the regulations on the importation of Egyptian cotton issued in W. T. B. R. 144, June 30, 1918, are revoked. Beginning January 1, 1919, licenses will be granted to import not to exceed 40,000 bales of Egyptian cotton, quality or grade unlimited. The War Trade Board will control the distribution in this country of the quantities imported through the Textile Alliance, Inc.

SEA ISLAND COTTON.—Net receipts at Savannah this season are 4,775 bales, against 19,859 last year. Interior points report an increase of business with prices a cent or two higher. Gin-

ning will be over by January 1. Quotations are omitted owing to the irregularity of asking prices.

DUCKS, DRILLS AND OSNABURGS.—The price of hose and belting duck remains firm, owing to the strength of the raw cotton market and the demand for duck, which is particularly active among the automobile trade. Quotations for the other fabrics have moved up and down, and are fairly described to-day as "same as last." Market stronger. Demand improving.

RAINCOAT FABRICS.—No business at all being done at the present time, but activity expected for the new year. Prices have been declining.

TIRE FABRICS.—Demand is slow, nothing unusual for the holiday season, but indications are for increasing activity.

NEW YORK QUOTATIONS.

DECEMBER 26, 1918.

Prices subject to change without notice.

AIRPLANE AND BALLOON FABRICS:

Wamsutta, S. A. I. L. No. 1, 40-inch.....yard	None
No. 4, 38½-inch.....	\$9.41 1/2 @

ASBESTOS CLOTH:

Brake lining, 2½ lbs. sq. yd., brass or copper insertion.....lb.	.85 @
2½ lbs. sq. yd., brass or copper insertion.....lb.	.90 @

BURLAPS:

32—7-ounce.....100 yards	10.25 @
32—8-ounce.....	10.50 @
40—7½-ounce.....	11.35 @
40—8-ounce.....	11.50 @
40—10-ounce.....	16.20 @
40—10½-ounce.....	16.30 @
45—7½-ounce.....	None
45—8-ounce.....	None
45—9½-ounce.....	18.25 @
48—10-ounce.....	21.80 @

DRILLS:

38-inch 2.00-yard.....yard	.30 1/2 @
40-inch 2.47-yard.....	.25 1/2 @
52-inch 1.90-yard.....	.32 1/2 @
55-inch 1.85-yard.....	.31 1/2 @
60-inch 1.52-yard.....	.40 @

DUCK:

CARRIAGE CLOTH:

38-inch 2.00-yard enameling duck.....yard	.31 @
38-inch 1.74-yard.....	.35 1/2 @
7-inch 16.66-ounce.....	.66 1/2 @
72-inch 17.21-ounce.....	.68 1/2 @

MECHANICAL:

Hose.....pound	.62 1/2 @
40-inch, 10-ounce.....	.64 1/2 @
Belting.....	.62 1/2 @

HOLLANDS, 40-INCH:

Ace.....yard	.30 @
Endurance.....yard	.33 @
Penn.....yard	.34 @

OSNABURGS

40 inch 2.35-yard.....yard	.25 1/2 @
40 inch 2.48-yard.....	.25 1/2 @
37½-inch 2.42-yard.....	.25 1/2 @

RAINCOAT FABRICS:

COTTON:

Bombazine 64 x 60 water-repellent.....yard	.17 @
60 x 48 mit water-repellent.....	.14 @
Cashmeres, cotton and wool, 36-inch, tan, blue and black.....	.80 @
Twills 64 x 72.....	.85 @
64 x 102.....	.30 @
Twill, mercerized, 36-inch, tan and olive.....	.35 @
blue and black.....	.37 1/2 @
Tweed.....	.45 @
Tweed, printed.....	.45 @
Plaids 60 x 48.....	.16 1/2 @
56 x 44.....	.17 1/2 @
Repp.....	.37 1/2 @
Surface prints 60 x 48.....	.16 @
64 x 60.....	.18 @

IMPORTED WOOLEN FABRICS SPECIALLY PREPARED FOR RUBBERIZING

—PLAIN AND FANCIES:

63-inch, 2¼ to 7½ ounces.....yard	1.15 @ 3.25
36-inch, 2¼ to 5 ounces.....	.80 @ 1.85

IMPORTED PLAID LINING (UNION AND COTTON):

63-inch, 2 to 4 ounces.....yard	.90 @ 1.70
36-inch, 2 to 4 ounces.....	.52 1/2 @ 1.05

DOMESTIC WORSTED FABRICS:

36-inch, 4½ to 8 ounces.....yard	.75 @ 2.00
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DOMESTIC WOVEN PLAID LININGS (COTTON):

36-inch, 3¼ to 5 ounces.....yard	.27 1/2 @ .50
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SHEETINGS:

JACKET:

Delaware.....yard	.30 @
Schenckkill.....yard	.32 @

SILKS:

Canton, 38-inch.....yard	.37 1/2 @
Plain.....	.40 @
Schappe, 36-inch.....	.55 @

STOCKINETTES:

COTTON, 52-INCH:

D—14-ounce.....yard	*.85 @ .90
E—11½-ounce.....	*.60 @ .65
F—14-ounce.....	*.85 @ .90
G—8-ounce.....	*.75 @ .80
H—11-ounce.....	*.70 @ .85
I—9-ounce.....	*.60 @ .65
Knitaback.....pound	*1.75 @ 2.00

WOOL, 52-INCH:

A—14-ounce.....yard	*1.75 @
B—14-ounce.....	*2.35 @
C—14-ounce.....	*2.50 @

TIRE FABRICS:

17¼-ounce Sea Island, combed.....square yard	1.62 @
17¼-ounce Egyptian, combed.....	1.30
17¼-ounce Egyptian, carded.....	1.27 @
17¼-ounce Peilers, combed.....	1.15
17¼-ounce Peilers, carded.....	.97

*Nominal.

TIRE FABRICS

JENCKES SPINNING COMPANY

PAWTUCKET RHODE ISLAND

EGYPTIAN COTTON CROP MOVEMENT.

To—				
1918-19.				
Received at Alexandria, 1918-19.	1918-19.	1917-18.	1916-17.	
Italy	16,501	34,166	28,299	
Macedonia	19,286	10,249	7,972	
Other United Kingdom ports	5,837	.....	.....
Total shipments to Great Britain	71,524	44,415	36,271	
To—				
France	10,642	3,287	3,474	
Spain	10,444	.....	.....
Switzerland	14,444	8,118	4,968	
Sweden	.....	.....	445	
Russia	.....	.....	50	
Greece	3,419	.....	.....
Total shipments to Continent	28,999	11,405	8,497	
To—				
United States of America	.....	.....	.....
India	3,982	7,714	.....
Japan	195,1	.....	.....
Total shipments to all parts	103,775	63,534	47,241	
Total crop (interior gross weight), cantars	6,315,841	5,126,199	.....

Cantar equals 98 pounds.

(Compiled by Davies, Beatty & Co.)

SEA ISLAND COTTON CROP MOVEMENT.

FROM AUGUST 1, 1918, TO NOVEMBER 29, 1918.

Receipts.				
Stock on hand, August 1, 1918—				
Savannah, 517.....bales	1018.19.	1917.18.	15,704	1,044
Received at Savannah (gross).....	3,194	14,922	.....	.....
Received at Charleston.....	3,047	3,225	.....	.....
Received at Jacksonville.....	3,032	15,297	.....	.....
Received at Brunswick.....	.....	.....	.....	.....
Received at Norfolk.....	.....	.....	.....	.....
Totals.....	24,997	34,488	.....	.....
Less exports.....	12,850	22,570	.....	.....
Stock November 29, 1918—				
Savannah, 9,408; Charleston, 2,769.....bales	12,177	11,918	.....	.....
Crop in sight at all ports to date.....	9,233	35,394	.....	.....
EXPORTS.				
To				
Great Britain				
From—	North	South	Totals	
Savannah.....	144	8,199	690	19,183.9
Charleston.....	.....	785	.....	9,033
Jacksonville.....	.....	3,052	.....	785
Brunswick.....	.....	.....	.....	3,032
Norfolk.....	.....	.....	.....	.....
Totals, 1918-19.....	144	12,016	690	12,850
Totals, 1917-18.....	.....	21,683	887	22,570
Decrease.....	3144	29,667	2197	9,720

(Compiled by John Malloch & Co., Savannah, Georgia.)

THE MARKET FOR CHEMICALS AND COMPOUNDING INGREDIENTS.

NEW YORK.

THE base metal market is dead. Present conditions are so hard to analyze that neither producers nor consumers care to do anything but await the outcome of the course of events. It is understood that, after January 1, government control of all commodities save tin will come to an end. There are no inquiries for copper. Tin, contrary to expectation, is no longer subject to international control, but will be regulated in the United States until the stocks of the Steel Products Co. have been utilized. Meanwhile there is no demand. There is no interest in lead. Few purchasers of spelter. Antimony is falling.

CARBON TETRACHLORIDE.—Sales of this material have been made at 18 cents a pound by second hands. The undertone is weak.

DRY COLORS.—As soon as production costs can be reduced, it is expected that prices will fall. The market is quiet now, but producers are beginning to pay considerable more attention to the export trade than they did in the past. Iron blues have been selling as low as \$1.10. Prices are firm.

LITHARGE.—Little demand for this pigment. American powdered, in casks, sells at from 10 3/4 cents to 11 1/4 cents. Quotations vary according to quantities asked for.

LITHOGENE. A 10 in price of 1 1/4 cent a pound has been announced for the next three months. Quotations now are 7 3/4 cents for carload lots and 8 1/4 cents for less than carload lots. More interest is being shown.

SULPHURIC ACID.—Although the producers had asked the government to continue price-fixing for some months, control ceased December 31. But the producers are closing contracts for future delivery at the old W. T. B. prices, \$28 for oleum, \$25 for 66-degree and \$18 for 60-degree.

TALC.—The situation remains unchanged. Shipping is the decisive factor in imports as well as exports.

WHITING.—In spite of the cancellation of government orders the supply is none too great, so prices are not undergoing change.

ZINC OXIDE.—The producers have announced new prices for the next three months which are 1/4-cent lower on American process oxide and one cent lower on French process oxide. It is thought imports will soon come in again. Some dealers are beginning to sell at a fraction less than prices quoted.

NEW YORK QUOTATIONS.

DECEMBER 26, 1918.

Prices subject to change without notice.

ACCELERATORS, ORGANIC.		
Accelerator N. C. C.....	lb.	50 @
Accelerator No. 1.....	lb.	*60 @
Accelerator No. 10.....	lb.	40 @
Accelerer.....	lb.	*\$2.62 @
Acceleam.....	lb.	.65 @
Aldehyde ammonia crystals.....	lb.	1.00 @
Aniline oil.....	lb.	.28 @
Annex.....	lb.	*1.25 @
Dunlex.....	lb.	.75 @
Excellerex.....	lb.	.85 @
Hexamethylenexamine (Vitalin).....	lb.	*.65 @
Hexamethylene tetramine (powdered).....	lb.	1.15 @ 1.25
Paraphenylenediamine.....	lb.	.35 @
Tensile.....	lb.	.60 @
Thiouranilide.....	lb.	.10 @
Velocite.....	lb.	*.50 @
Vitanine.....	lb.	*.65 @
ACCELERATORS, INORGANIC.		
Lead, dry red.....	lb.	.11 1/4 @
sublimed blue.....	lb.	.09 1/4 @
sublimed white.....	lb.	.09 1/4 @
white, basic carbonate.....	lb.	.10 1/4 @
white, basic sulphate.....	lb.	.09 1/4 @ .09 1/4
Lead oleate.....	lb.	.27 @ .33
Lime, flour.....	lb.	.02 @ .02 1/2
Litharge, domestic.....	lb.	.10 1/4 @
English.....	lb.	.11 @ .15 1/2
sublimed.....	lb.	.11 @
Magnesium, carbonate.....	lb.	.14 @ .16
biatomic.....	lb.	.02 1/2 @
calcined heavy (Thistle).....	lb.	.11 @
heavy (States).....	lb.	.07 1/2 @
light (Manhattan).....	lb.	.35 @
Magnesium oxide.....	lb.	*.06 1/2 @
Magnesite, calcined, powdered.....	ton	50.00 @ 65.00
ACIDS.		
Acetic, 28 per cent (bbis.).....	cwt.	5.16 @
Glacial, 99 per cent (carload).....	lb.	.90 @
Cresylic, 97-99 per cent, straw color.....	lb.	1.12 @
95 per cent, dark.....	gal.	1.02 @
Moriatric, 20 degrees.....	cwt.	2.05 @ 2.30
Nitric, 36 degrees.....	cwt.	0.85 @
Sulphuric, 66 degrees.....	cwt.	2.10 @
ALKALIES.		
Caustic soda, 76 per cent (bbis.).....	lb.	.07 @
Soda ash (bbis.).....	lb.	.04 1/2 @
COLORS.		
Black:		
Bone, powdered.....	lb.	.05 @
granulated.....	lb.	.09 @
Carbon, black (sacks, factory).....	lb.	.16 @ .25
.....	lb.	.17 @
Ivory black.....	lb.	.16 @ .30
Lampblack.....	lb.	*.75 @ 1.50
Oil soluble aniline.....	lb.	.15 @
Rubber black.....	lb.	.07 @
Blue:		
Cobalt.....	lb.	.35 @ .35
Prussian.....	lb.	*1.25 @
Ultramarine.....	lb.	.22 @ .50
Brown:		
Iron oxide.....	lb.	.04 @ .05
Ochre, domestic.....	lb.	.05 1/2 @
Imported.....	lb.	.05 1/2 @ .06
Sienna, Italian, raw and burnt.....	lb.	.07 @
Umber, Turkey, raw and burnt.....	lb.	.05 @ .06
Green:		
Chrome tile.....	lb.	.17 @
Oxide of chromium (casks).....	lb.	.30 @
India rubber.....	lb.	*.75 @

Red:

Antimony, crimson, sulphuret of (casks).....	lb.	.50	@
Antimony, crimson, "Mephisto" (casks).....	lb.	.60	@
Antimony, golden, sulphuret of (casks).....	lb.	.25	@
Antimony, golden, "Mephisto" (casks).....	lb.	.25	@
Antimony, golden sulphuret (States).....	lb.	.28	@
Antimony, red sulphuret (States).....	lb.	.25	@
Antimony, vermilion sulphuret.....	lb.	.35	@
Arsenic, red sulphide.....	lb.	.35	@
Indian, pure bright.....	lb.	.16	@
Iron oxide, reduced grade, pure bright.....	lb.	.15	@
Oil soluble aniline, red.....	lb.	2.50	@ 3.00
Oxymony.....	lb.	.18	@
Vermilion.....	lb.	.23	@ .06
Vermilion, English, pale, medium, dark.....	lb.	2.05	@

White:

Aluminum bronze powder.....	lb.	.85	@
Aluminum, C. P. (cases).....	lb.	1.00	@
Lithopone, imported superior.....	lb.	1.00	@
Lithopone, domestic.....	lb.	.07	@ .08
Ponolith (carloads, factory).....	ton	.07	@ .08
Rubber makers' white.....	lb.	.08	@ .08 1/4
Zinc oxide, Horeshead (less carload, factory):			
"XXX red".....	lb.	.10	@
"Special".....	lb.	.10	@
French process.....	lb.	.12	@
green seal.....	lb.	.13	@
white seal.....	lb.	.13	@
(States).....	lb.	.10	@
Zinc sulphide, pure.....	lb.	None	

Yellow:

Cadmium, tri-sulphate.....	lb.	*2.68	@
Cadmium, sulphide.....	lb.	*1.80	@
Chrome, light and medium.....	lb.	.30	@
India rubber.....	lb.	*1.00	@
Ochre, light or dark.....	lb.	.05	@
Oil soluble aniline.....	lb.	*2.00	@
Zinc chromate.....	lb.	*.50	@

COMPOUNDING INGREDIENTS.

Aluminum flake (bbls. factory. Less 5% carload).....	ton	26.00	@
Aluminum oxide (sacks factory. Less 5% carloads).....	ton	26.00	@
Ammonia carbonate, powdered.....	lb.	.12	@ .13
Asbestos (bags).....	lb.	.11	@ .12
Asbestos (bags).....	ton	25.00	@ 25.00
Barium, carbonate, precipitated.....	ton	60.00	@
Barium, sulphide, precipitated.....	ton	30.00	@
Barytes, pure white.....	ton	30.00	@
off color.....	ton	25.00	@
uniform floated.....	ton	32.00	@ 34.00
Basor.....	lb.	.05	@
Blanc fixe.....	lb.	.04	@
Bone ash.....	lb.	.06	@
Chalk, precipitated, extra light.....	lb.	.05	@ .05 1/4
precipitated, heavy.....	lb.	.04	@ .04 1/4
China clay, domestic.....	ton	15.00	@ 22.00
imported.....	ton	15.00	@
Corn flour.....	lb.	.50	@
Cotton linters, clean mill run, f. o. b. factory.....	bale	45.00	@ 50.00
Fossil flour (carloads).....	ton	55.00	@ 50.00
(bolted).....	ton	55.00	@ 50.00
Glue, high grade.....	lb.	.36	@ .45
medium.....	lb.	.31	@ .35
low grade.....	lb.	.10	@ .25
Graphite, flake (400 pound bbl).....	lb.	.04	@ .08
amorphous.....	lb.	.03	@ .08
Ground glass FF. (bbls.).....	ton	45.00	@ 50.00
Insufuril earth, powdered.....	ton	55.00	@ 60.00
bolted.....	ton	55.00	@ 60.00
Mica, powdered.....	lb.	.03	@ .08
Plaster of Paris.....	ton	2.00	@ 3.00
Plasticum.....	lb.	.05	@ .08
Pumice stone, powdered (bbl).....	lb.	.05	@ .08
Rotten stone, powdered.....	lb.	.02	@ .04 1/2
Rubbing flux.....	lb.	*.15	@
Rub-R-Glu.....	lb.	*.38	@
Silica (cases).....	ton	22.00	@ 40.00
Soapstone, powdered, domestic.....	ton	5.00	@ 7.00
imported.....	ton	None	
Starch, powdered corn (carload, bbls.).....	cwt.	4.25	@
(carload, bags).....	cwt.	4.00	@
Talc, American.....	ton	20.00	@ 40.00
French.....	ton	20.00	@
Tripoli earth, powdered.....	lb.	.01	@
Tyrite.....	ton	80.00	@
Wallope rubber flux (factory).....	ton	80.00	@
Whiting.....	cwt.	.90	@ 1.00
commercial.....	cwt.	1.30	@
gliders.....	cwt.	1.40	@
Paris, white, American.....	cwt.	2.00	@
English, cliffstone.....	cwt.	2.00	@
Wood pulp XXX.....	ton	*40.00	@ 45.00

MINERAL RUBBER.

Gilsonite.....	ton	47.50	@
Gumcoke (carloads factory).....	ton	*40.00	@ 57.00
M. K. X.....	ton	None	
Liquid rubber.....	ton	*.14	@ .15
Pioneer, carload, factory.....	ton	25.00	@
Richmond.....	ton	35.00	@
No. 64.....	ton	17.00	@
Refined Elastite.....	ton	8.00	@ 10.00
Raven M. R.....	ton	8.00	@ 10.00

OILS.

Corn, crude (bbls.).....	lb.	*.18	@ .18 1/4
refined.....	lb.	*2 1/2	@
Glycerine (28 per cent).....	lb.	.45	@
Glycerole.....	lb.	.10	@
Linseed, raw (carloads).....	gal.	1.60	@
Linseed compound.....	gal.	1.00	@
Palm.....	lb.	*.32	@ .50
Paraffin.....	gal.	.40	@ .41
Petrolatum.....	lb.	.08	@
Petroleum grease.....	lb.	.06 1/2	@
Pine, steam distilled.....	gal.	.69	@
Pine tar.....	gal.	.35	@
Rapeseed, refined.....	lb.	.17	@
Rosin.....	lb.	.22 1/2	@
Soya bean, crude.....	lb.	.16 1/2	@
refined.....	lb.	.22	@
Tar, commercial (cases).....	cwt.	.35	@ .36
Noreacal No. 30.....	gal.	.65	@

SOLVENTS.

Acetone (38.99 per cent drums).....	lb.	.30	@
methyl (bbls.).....	gal.	1.25	@
Benzol, C. P. (drums).....	gal.	.22	@ .27
Beta-naphthol, resublimed.....	lb.	.95	@
ordinary grade.....	lb.	.63	@
Halowax oil No. 1000 (f. o. b. Wyandotte).....	lb.	*.30	@
No. 1001 (f. o. b. Wyandotte).....	lb.	.30	@
Naphtha, motor gasoline (steel bbls.).....	gal.	.24 1/2	@
73 @ 70 degrees (steel bbls.).....	gal.	None	
68 @ 70 degrees (steel bbls.).....	gal.	None	
Solvent.....	gal.	.21	@
V. M. & P. (steel bbls.).....	gal.	.23 1/2	@
Toluol, pure.....	gal.	.25	@ .30
Turpentine, spirits.....	gal.	.20	@ 70 1/2
wood.....	gal.	.58	@ .63
Osmaco reducer.....	gal.	.65	@ .66
Zylo, pure.....	gal.	.45	@ .50
commercial.....	gal.	.30	@ .35

SUBSTITUTES.

Black.....	lb.	.11	@ .18
White.....	lb.	.13	@ .25
Brown.....	lb.	.18	@ .24
Brown factice.....	lb.	.10	@ .22
White factice.....	lb.	.15	@ .24
Cordex.....	lb.	.35	@
Energine.....	lb.	*.30	@
Paragol soft and medium (carloads).....	cwt.	17.08	@
hard.....	cwt.	16.58	@
Toughenite.....	lb.	*.40	@

VULCANIZING INGREDIENTS.

Carbon, bisulphide (drums).....	lb.	.07 1/2	@
Carbon, disulphide (drums).....	lb.	.07 1/2	@
Lead, black hypsulphite (Black Hypo).....	lb.	*.47	@
Orange mineral, domestic.....	lb.	.14 1/2	@
imported.....	lb.	.14 1/2	@
Sulphur, flour, Brooklyn brand (carloads).....	cwt.	3.40	@
pure soft (carloads).....	cwt.	3.40	@
superfine (carloads, factory).....	cwt.	2.50	@

(See also Colors—Antimony)

RESINS AND PITCHES.

Castella gum.....	lb.	.70	@ .75
Pine tar, retort.....	bb.	15.50	@
kiln.....	bb.	15.00	@
Pitch, Burgundy.....	lb.	.10	@
cavi tar.....	lb.	.08	@
pine tar.....	lb.	.05	@
fronto.....	lb.	.14	@
Resin, Pontianak, refined.....	lb.	None	
granulated.....	lb.	None	
fused.....	lb.	None	
Rosin, K.....	lb.	17.00	@
powdered.....	lb.	.20	@
Shellac, fine orange.....	lb.	.65	@ .70
Tar, retort.....	bb.	13.00	@ 13.50
retort.....	bb.	14.00	@ 14.50

WAXES.

Wax, beeswax, white.....	lb.	.70	@
cerein, white.....	lb.	.20	@ .22
carnauba.....	lb.	.08	@ .10
ozokerite.....	lb.	.78	@ .80
green.....	lb.	.45	@ .50
montan.....	lb.	.13	@ .30
paraffin, refined 118/120 m. p. (cases).....	lb.	.13	@
124/126 m. p. (cases).....	lb.	None	
128 m. p. (cases).....	lb.	.14 1/2	@
150 m. p. (cases).....	lb.	None	

*Nominal

A CORRECTION.

Mrs. Bertha M. Lufbery has been appointed executrix of the estate of the late George F. Lufbery, Jr., at Elizabeth, New Jersey. Contrary to the statement which appeared in our issue of December 1, 1918, Mr. Lufbery's rubber substitute business has not been taken over by W. J. Moren.



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Another story on page 40a

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Vol. LIX. No. 5.

FEBRUARY 1, 1919

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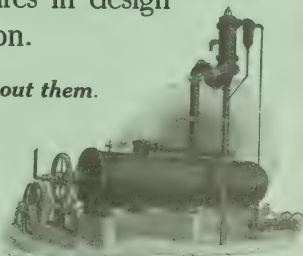


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AS TO MACHINE-GROWN RUBBER.

GREAT INTEREST has developed of late in American-grown rubber. This has chiefly centered about guayule, although other shrubs and plants that contain caoutchouc, and grow in the temperate zone, are receiving attention. Of them all so far, guayule cultivation is the only one the success of which seems assured. A spectacular feature concerning it is the profit per acre that analysis of the project develops.

For example, a comparison of *Hevea* and guayule profits at the time of the historic rubber craze would be about as follows: *Hevea* then brought \$2 a pound and the profit was about \$400 per acre, while guayule sold at \$1 a pound and if cultivated would show a profit of more than \$16,000 per acre. Or basing the comparison on normal costs and prices, *Hevea* profits would stand at, say, \$136 an acre, and cultivated guayule at over \$6,000 per acre.

These figures, to be sure, do not include the cost of installing the plantation plant, extraction plant, patent royalties, etc. But cutting them in half to cover these items, there remains a profit of \$3,000 an acre, which is astounding and almost unbelievable.

There is, however, an important fact to be kept before those who plan to start in this line. It is a far more intricate business than *Hevea*-growing and lack of knowledge in a dozen different essentials will spell disaster. There is also the high cost of installation of the plantation and the extraction factory. To prepare, irrigate and plant enough land to keep a 10-ton mill going would cost roughly \$500,000, and the mill at least \$200,000. In other words, it is a million-dollar undertaking and the small operator has no great chance. With the expansion of business, however, it is perfectly possible that central factories will be installed for extraction and that guayule-growers will ship their product in as the beet-growers do theirs to the sugar centrals.

As to the grade of rubber produced, plant analysis has found certain types of shrub that carry a high grade of rubber, and these have been hybridized with plants that contain percentages of 20 per cent or more of rubber. A better grade of gum than the Mexican product is therefore in prospect in the cultivated guayule rubber, some day to figure largely in our markets.

INCREASE IN RUBBER GOODS EXPORTS.

THE American rubber manufacturer is so accustomed to big things that he remains unimpressed by present accomplishments that formerly would attract admiring attention. A case in point is the great expansion in the export of rubber goods. To cite a few figures, in 1913-14 mechanical rubber goods exports totalled \$2,372,887. In 1917-18 they expanded to \$4,578,396. Rubber footwear in the same periods were \$1,113,844 and expanded to \$5,774,341. Tires grew from \$4,108,294 to \$15,108,294. Even druggists' sundries increased from \$200,000 to \$884,245.

These are great increases. Part of them, as boots and tires, are directly due to the unusual demands of the war, but only in part. The burning question is, whether or not we can duplicate or perhaps surpass these records.

THE OLD MAN MAKES GOOD.

PRIOR to our entrance into the Great War, the United States was a young man's country. Manufacturers, big and little, were disciples of Dr. Osler to an extreme degree. A man over thirty-five was viewed with suspicion. The general belief was that at thirty-six he began to "go stale." Gray hair was not a "crown of glory" but a certificate of dismissal. When, however, the youngsters joyously gave up their positions to smite the Hun, the older men took their places. Not only did they take them, they filled them, and so well did they prove their value that the age limit has passed into the discard. The general feeling is that older men, even if

slower (sometimes they are faster), make fewer mistakes and in the end accomplish just as much as the kids. The older man possesses experience, judgment and balance, the younger man energy, optimism and enthusiasm. All of these attributes have great industrial value.

RUBBER FACTORY FIRES.

ARE rubber factories specially hazardous insurance risks? Surely they are subject to the general run of fire causes in manufacturing establishments, and besides these, a special risk in the use of volatile solvents which throw off inflammable vapors. Indeed, a noted authority, after investigation of a large number of fires occurring in rubber mills, claims that over 70 per cent of those where the sources were discovered, were from the accidental ignition of these liquids, or the vapors arising from them.

The most common cause is the combination of vapor from these solvents, and an electric spark, in a dry atmosphere. The greater proportion of them are at the spreading machines, where friction produces static electricity, which, being discharged, explodes the vapor and starts the resultant fire.

Cases are on record where the machine-tenders are themselves the generators of static electricity, which, emanating from them, induces the explosion. While accidents from this cause are far from common, several fires have been laid to this peculiar phenomenon.

Many fires are the result of carelessness on the part of workmen, whose very familiarity with these dangers has resulted in almost criminal heedlessness. Smoking in vapor-laden rooms, or where finely divided inflammable dust floats in the atmosphere, the striking of matches, the carrying of lighted lanterns, are known causes of rubber-mill fires. Safety first means humidifying rooms where vapors form, thorough electrical grounding of machines, and the prohibition of carelessness on the part of workmen.

COPYRIGHTING INDIA RUBBER.

ACERTAIN SHOCK is experienced by English-speaking rubber men because of the action of the India Rubber, Gutta Percha and Telegraph Works Co., Limited, in copyrighting the words "india rubber" in Argentina. The Silvertown company, one of the largest in England, has always been regarded as not only very progressive but eminently fair. Its action has therefore caused much comment and considerable indignation. Guessing at its reasons it may be that as it started the first rubber factory in Argentina it felt that the trade of that country belonged to it though preemption. Or it may be that the big sign fronting its works in Buenos Aires which bears the words "India Rubber" (rather remarkable in a Spanish-speaking country) led it to feel that it had a proprietary right in the words as far as Argentina was concerned. A more reasonable surmise,

however, is that in the face of increasing competition it put a local attorney at work securing Argentine copyrights on all of its trade-names, and he supposed india rubber to be one of them. At all events it is not likely that the copyright will stand nor is it supposable that the Silvertown company would desire it to.

HOMER E. SAWYER AS PRESIDENT.

WITH the New Year comes a new president of The Rubber Association, one widely known and universally esteemed. Mr. Sawyer served his apprenticeship in New England at the great factories of the Boston Rubber Shoe Co. When that company merged with the United States Rubber Co., he was a vital factor in both the selling organization and the manufacturing field, in both of which he was thoroughly at home. In spite of many responsibilities Mr. Sawyer, from the beginning, has always been active in The Rubber Association. His familiarity with its history and development, his broad knowledge of the whole rubber business, his wide acquaintance, together with his genial efficiency, make him an ideal leader.

AN IMPORTANT BRITISH MANUFACTURER OF TIRE-repair machinery, in protest against the word vulcanizer as applied to the man who operates such a machine, has coined a new word. Henceforth the vulcanizer, the man, is to be a "vulcanist." We are not sure that this is wise. If such word-vaccination becomes the fashion, the rubber trade may see instead of washer, washist; mixer, mixist; calender man, calendist; boiler man, Bolshevist.

Why not abandon the ists and turn to the eers? Thus an engine-driver is an engineer. Why not make a vulcanizer operator a vulcaneer? The term is new, easy to remember, essentially masculine, and even romantic.

INDUSTRIAL ASSOCIATIONS IN FRANCE ARE DEMANDING that a committee of technicians be appointed in each industry and sent to indicate on the spot such industrial material as may replace plants destroyed or looted in the regions invaded by the German authorities.

This practical suggestion is important, for it would enable French industrialists, by receiving in kind at least, the equivalent of destroyed or looted plants, to get to work more rapidly and to meet the competition prepared in advance by the enemy.

This is exactly what this paper has been suggesting editorially ever since the armistice was signed. It is the only open road to reparation.

THIRTY MILLION PNEUMATIC TIRES FOR 1919 IS THE confident prediction of the big tire makers. This is very many and means much rubber. It is, however, a sane prophecy. And, once northern Europe is pacified, other millions will be called for. Indeed, once the League of Nations is an accomplished fact, and peace really comes, rubber producers and tire manufacturers, the world over, will have all they can do to fill orders.

Victory Banquet.

Nineteenth Anniversary Banquet of The Rubber Association of America, Inc.

SURPASSING any previous function in colorful setting, exquisite menu, pertinent addresses and delightful entertainment, the banquet at the Waldorf-Astoria on the evening of January 16, 1919, was indeed a triumph. Preceding the dinner the members and guests assembled in the reception rooms with social informality, meeting old acquaintances and making new ones. When the doors of the ballroom were opened eight hundred fifty banqueters took their places while the orchestra played popular marches. A handsome program and a small silk American flag were presented to each member and guest.

American flags in artistic profusion decorated the walls and balconies of the ballroom, symbolizing the Army, while the columns were draped with American jacks, emblems of the Navy. Prominently displayed over the rostrum was a diadem of flags of the Allies with Old Glory in the center, and below, a silk banner bearing the great seal of the United States, flanked by the coats of arms of the United States, the State, and the city of New York.

During the dinner patriotic and popular music by the orchestra gave zest to the excellent menu, and when the last course was finished the toastmaster, Bertram G. Work, called the meeting to order. By this time the balconies were filled with ladies who had been invited to enjoy the speeches and vaudeville entertainment that concluded the program.

After "The Star-Spangled Banner" had been sung in chorus, the toastmaster announced that he had the unexpected pleasure of introducing a man of national reputation who had just arrived from abroad and would say a few words. He proved to be a vaudeville performer with a startling resemblance to President Wilson, and his witty monolog caused much laughter and left the audience in rare good humor. The cabaret vaudeville that followed the speeches was thoroughly enjoyed by everyone.

PRESIDENT WORK'S REPORT.

I will take a few moments for a few words. With a preamble of a year ago I had no nerve and I had a pretty good voice. This year I have got the nerve, but I have lost my voice.

The activities of our Association during the past year have been vital and continuous. They have made history for the industry, and are written into the annals of the Association. You are all familiar with the details of the year's work, so a review of them this evening is unnecessary. The actual work of your War Service Committee ceased shortly after the signing of the armistice, and this afternoon the committee was officially discharged by your board of directors. In behalf of this ex-War Service Committee, I wish to express the warmest thanks and appreciation for the loyal support of the industry which, as is generally known, was given at no inconsiderable sacrifice. I also wish to express my personal appreciation and thanks to all members of the War Service Committee for their loyal support and cooperation. This committee held 57 meetings during the year, and it is a magnificent tribute to the industry that a body of men composed of highly competitive elements at no time allowed their individual interests to interfere with the one object for which they were responsible to our country and to the industry. Great credit is due to the chairmen and members of the divisional committees. These men spent nights in travel and days in conference, time after time during the year. They unselfishly contributed to the cause, and were actuated only by the thought that our industry must do its part in winning the war.

The work of the Central Committee was tense, but only for the duration of the war, while the work of the Divisional Committees will live after them, having been transfused into permanent bodies representative of each branch of the industry.

WAR INDUSTRIES BOARD APPRECIATES LOYALTY OF THE RUBBER INDUSTRY.

We hoped to have with us to-night some other members of the War Industries Board, but other engagements made it impossible. Mr. Baruch writes under date of December 18th:

WAR INDUSTRIES BOARD, WASHINGTON, D. C.

My dear Mr. Work:

I am deeply appreciative of the honor you do me in inviting me to be the guest of The Rubber Association on January 16th. I should like to be able to take that opportunity to express in person my appreciation of the loyal cooperation the rubber industry has given the War Industries Board throughout its period of service, but it is impossible for me to make any definite engagements in the near future. With very kind regards,

Very truly yours,
BERNARD M. BARUCH, Chairman.

As we all know, he is now in Paris. We have with us to-night Mr. Baruch's right-hand man, Mr. Peek, but Mr. Peek came on the condition that he would not be asked to speak. So I cannot break the agreement with him.

Judge Edwin B. Parker writes from Houston, Texas, under date of January 3d:

WAR INDUSTRIES BOARD, WASHINGTON, D. C.

Dear Mr. Work:

I have delayed until now definitely replying to your very thoughtful invitation of the 16th to attend the Victory Banquet of The Rubber Association to take place in New York on the 16th instant. I very much fear my engagements here are such that it will not be possible for me to accept your invitation; but if permissible to do so, I will not definitely decline now. If I find that I can be in New York on that date, you may be sure that I will not permit anything to prevent being with you. I beg to repeat now what I have had occasion to say before, that you and your Committee represented not only your industry, but our Nation, in dealing with the rubber situation during the war, and there was no industry from which our Board received more wholehearted and effective cooperation than yours. Our association will always bring to me pleasant memories.

Cordially yours,
EDWIN B. PARKER,
Priorities Commissioner.

Gentlemen, it is also a matter of great regret that Mr. H. T. Dunn, former chief of the rubber section, cannot be with us to-night. He is still suffering from an attack of grippé contracted while in Washington, and aggravated by continuing his work with the War Industries Board when he should have been in bed. We all owe a debt of gratitude to Mr. Dunn for the able and unselfish manner in which he represented our industry in Washington.

CONSERVATION AND STANDARDIZATION TO CONTINUE.

The work of conservation, elimination and standardization will be perpetuated by the various divisions of the association. Some were already organized, and others have been organized to take up this work in all matters of divisional interest. The functions heretofore exercised by the Conservation Division of the War Industries Board are to be continued by the Department of Commerce under its industrial cooperative service. While the work of the new service will be voluntary so far as the industries are concerned, our work in this direction can be materially aided and broadened by cooperating with the Department of Commerce.

Secretary Redfield is our honored guest this evening, and has very kindly agreed to outline to us in a general way the proposed work of his department in connection with industries. I take great pleasure in introducing the Secretary of Commerce, William C. Redfield.

SECRETARY REDFIELD'S ADDRESS.

Mr. Toastmaster, Ladies and Gentlemen:

We have had two very wonderful examples for all the world to see in these recent months; one of them an example of horrible selfishness. We saw a great and intelligent people, more devoted to science and research than all other nations, given over to the powers of evil and devoting itself to the exploiting of the world for its own glory and profit.

I went, two or three years ago—no, it was more than that; it seems so near—it was seven years ago, I went down the coast of China, looking for an American business house, and found

The Victory Banquet.



NINETEENTH ANNUAL BANQUET OF THE RUBBER ASSOCIATION OF AMERICA, INC., AT THE WALDORF-ASTORIA, JANUARY 16, 1919.

not one all the way from Tokio until I got to Singapore. At Hong Kong, I found a Scotchman who had lived in New York. That was the nearest approach to an American house on all the Chinese coasts. But everywhere, in every port, under the splendid hospitality of the English rule, the German was prospering; and in Hong Kong harbor I lay immediately alongside of the German armored cruiser *Stavros*, now gone to a well-earned grave at the mouth of English cannon.

THE SELFISHNESS OF GERMANY.

We saw Germany build up her industries that she might make the world tributary to Germany; for German gain, for German profit, that you and I and all men might so far as possible contribute to the power and the domination of Germany. In the first week of the war our minister at The Hague telegraphed to the President, "Germany means to breakfast in Paris, lunch in London, and dine and spend the night in New York." And you are perfectly familiar with the fact that the Kaiser said long years ago that on the opposite side of the Atlantic without Germany and the German kaiser no one would dare make any high decision. We saw the awful tragedy that ended that dream of selfishness. I trust we have learned the awful lesson that history has again reiterated, this time in our midst. One after another the men and the people that would have ruled the world for their profit have come, have passed their little time upon the stage and gone.

THE SACRIFICES OF UNSELFISHNESS.

And we saw here the other thing. I saw it every day these two years past—a vision of great unselfishness, of men having come, forgetting themselves and all the things that men count precious, leaving at home business and personal profit of every kind, and for a trivial compensation or none at all, coming to the seat of government and working without regard to hours or strain in order that their country might defeat that power which sought its overthrow. Be not deceived, my friends. We are escaped as a bird out of the snare of the fowler. We fought what you and I hold dear. It is by the force of the sacrifice of American men that our daughters have not suffered as did those of northern France, that we face readjustment and not reconstruction. Were you an audience of French or Belgian business men where would you go in northern France or Belgium to find your homes? It would seem strange to you to have nowhere to sleep, to find your business stripped and gone, to go back perhaps to your native town unable to find the site where once your dwelling was. That is reconstruction indeed. Beside this your problems and mine are trivial and they are based all through on the willing sacrifice of American business men who have done more in one year to make their government know that the heart of American commerce was true than that could have been accomplished in years of talking and pleading.

THE INDUSTRIAL POWER OF AMERICA.

For we have seen you in our very midst at work, and we have seen the power of this nation gathered through you into a force that overwhelmed the enemy. A year ago or more a minister of a neutral power was about to leave his post in Washington, and came to bid me farewell, for I knew him as a friend. I knew he was going where he had a German colleague, and I sent a message by him to his German colleague, not formally so, but saying to him something which I knew he would repeat, and it was this:

That he would see a spectacle such as the world had not before witnessed of the unrolling of American industrial power, and that he might watch for it; that it would not be rapid, but it would be as certain as fate, and that whatever we might do with army or navy this one thing was sure—that the industrial power of America would present to the world one of its most majestic spectacles, as it was soon to be placed, all of it, freely at the disposal of the nation as one tremendous power for righteousness in war.

And we saw that power so exerted. I wish it had been possible for you—I wish it had been possible for me—to have seen the physical work that the Army did in France. I knew a little bit of what was going on. Once in a while I caught a vision of things so vast that they staggered me, who have spent my life in American industry.

One evening we were considering the question of fire insurance on the factories which were at that time busy backing up the Army, and it was far from being advanced then to what

it afterwards became, and it was brought out in the evening's talk that we should have to look after fire insurance upon 35,000 separate factories working at that time to support the American Army. The spectacle some day will be written, and will be, as I said to my friend, the minister, majestic, but the finest thing of it all was the human side that forgot itself and faced the selfishness of Germany with the unselfishness of America.

OUR DUTY TO SUCCOR RUSSIA.

And now we look still to the unselfishness of America, for we face great things yet to be done. The military operations, let us hope, are past. Let us hope are past! But you and I sit as they in a great theater before a curtain that has not yet lifted, behind which lies, unknown as yet, the dreadful problem that Russia presents to the world. We have seen, thank God, within a week, something that looks like the restoration of sanity in Germany itself, but what the stage may hold behind the Russian veil, we do not certainly know, for there are 180,000,000 human souls there of whom 160,000,000 cannot read or write; they cannot be reached by press or by book or by pamphlet, and what we are there to find, we do not yet fully know. We may not, you and I, we may not, like a turtle, draw our hands, our feet and head into our shell and say, "We will have none of this." We may not, like the ostrich, bury our head in the sand and say, "We see nothing."

Your boys and my boy fought the fight against the autocracy of imperialism. Let us hope and pray we may not have to face the autocracy of anarchy. We believe that Bolshevism rests on hunger, and we have abundance to spare, thank God, and we must give of that abundance. We sent last year twice the food we ever thought we could spare. We must send at least one-half as much more food this year.

We have it to send, but if you trouble, as some of you may, on the question of shipping, gentlemen, remember that over twenty million tons of food must go yonder from this country alone before the spring is half gone, lest starvation, which means anarchy, walk abroad. It is walking abroad now. We are through with military operations. We are not through yet with the problems. There is the question, then, which I have thus raised, of ships; and now I speak to you as practical men and manufacturers in the language which you know so well.



WILLIAM C. REDFIELD.
SECRETARY OF COMMERCE.

SHIPPING BOARD TO ESTABLISH COMPETITIVE RATES.

We have not yet a plant, a physical plant, afloat in this country to do the work that we are called upon to do. Let us not be too impatient with those who control our shipping. Bear in mind, as I shall tell you in a moment, that I am doing myself, in every possible word and influence, all that can be done to bring sufficient shipping to the immediate relief of the commerce that waits in all our ports; and to-night, thank God for it, it is announced that the Shipping Board has seen the need of standing the gaff, as you have to stand it, and of reducing its valuations on this vast multitude of shipping, so that the rates it is hereafter to charge shall be fairly competitive rates, and your commerce shall be free to move on equal terms with all the world.

There have been days, there have been recent days, in which it was deemed possible that an effort might be made to charge American industry with rates at sea so as to earn a profit upon the war cost of American ships. That danger is past. Perhaps the earthquake reported a few days ago was after all, merely the reaction of certain telegrams passing under the sea.

None the less, the thing is over; the danger is past, and we are free to move at sea once more when once we can get the ships to go. Out of twenty-one vessels to be built this month on the Pacific Coast alone, I have succeeded in getting six for our trans-Pacific trade; for the others are needed for food for the world, and for the transportation of necessary army supplies.

THE UNITED STATES A WORLD CREDITOR.

I should like, if time permitted, to develop still further the great business problems we are now facing, the problem of credits. You know very well, and I, that we must face six billion dollars in taxes this year; that above it we must face a loan of five billion dollars in the month of April, and that on top of that we must continue our credits to those yonder who have no credits themselves, and who needs must buy and have not that wherewith to pay. Would you leave the people of Serbia without homes? They have been driven from their land—all the families, men and women and children, all that

sum—let me come back to find their country stripped. Would we supply to Belgium homes? Would we supply to Northern France homes? It is probable a million dwellings must be built in Continental Europe alone this coming spring and summer. From somewhere they must get cement and lumber and hardware, and none has so much of all to spare as we. But how shall they be paid for save by credits which we shall ourselves extend in addition to what we have already done? And you must be prepared, you men of affairs, to be asked and to consent to the purchase of strange and novel securities in your home towns; for unless America shall buy the securities of foreign corporations, industrial, municipal and others, it seems that it would be very difficult indeed to build up the world again to anything like its former status.

The war is over, say you? No, no. The explosion of the cannon has stopped, but the stern service of war is here yet; and in food and credit and in materials and in machinery, it must still go on.

EARLY REMOVAL OF CABLE CENSORSHIP AND TRADE RESTRICTION.

That leads to another thought, which I am sure you have all been thinking. What about cables? What about censorship? What about restrictions that still exist on trade? First of all, then, it is my desire, it is all the thought of Washington, to get rid as rapidly as may be of every restriction on every trade of every kind. But there are certain things in which we are not free to move alone. By the very terms of the armistice, the blockade remains, and that blockade we are not free to move to lift by ourselves, for we are bound with others to act in good faith with them. A part of that blockade is the cable censorship, and it is not in the power of the United States alone to act upon that matter. We must act concurrently with those with whom we have agreed to act. Nevertheless, I have within a few days cabled to Secretary Lansing in Paris, saying to him that it is my earnest hope that he may get concurrent action of our associates in the war, and release the cables and the censorship freely for America.

PROMOTION OF UNITED STATES FOREIGN COMMERCE.

I want to speak, for my time is properly limited, very briefly, of the future work we are planning to do. It takes three forms. It takes the direct form of promotion of the commerce by which the country lives. We have within this week been given by Congress double the sum that we have ever had before.

I do not speak a word of criticism at all when I say that on going to Washington six years ago I found the sum annually appropriated for the promotion of American commerce abroad the vast annual figure of \$60,000. I presented to Congress the statement that many an advertising firm even in my home Borough of Brooklyn spent more than that in selling dry goods to the women of the town. I pleaded only a few weeks ago at least a sum equal to the payment of the soldiers of one regiment be given to develop American commerce abroad. We asked three times what we had. It had grown from the \$60,000; it had grown more than ten times. We asked three times what we had and we got twice, and we are glad to have it; and now with the funds given by the President himself that our commerce may have eyes and ears abroad, the men are going out until we have already covered most of the world and we hope to cover it fully with trained business men of affairs, speaking the languages of the countries to which they go, always, and trained in your factories and others to do the work of American industry throughout the world until we think we shall be able by the summer-time, for the appropriation does not take effect until the 1st of July, to put abroad in all the round globe, bright, earnest, capable young American business men, eagerly carrying the flag into every land on which the sun shines.

GERMAN SCIENTIFIC TRADE METHODS.

Secondly, we aim to bring to you something you have never had, and not having had have hardly missed, for Germany built her industries on science, gentlemen. Her great success all around the globe was based on actual knowledge. It did not raise a laugh in any German factory to mention the name of a strange country. It has often made me feel queer to speak of some foreign city of importance in an American shop and have the men laugh as if the very name itself had something funny about it.

I remember discussing once the great Dutch East Indian Port of Soerabaya to an American audience, only to discover shortly thereafter that very few of them had ever heard of a port in which hundreds of vessels lie all the time.

Germany built her business on scientific work, and in her business houses of large size were men who spoke all the

civilized languages and some besides; and she knew with perfect certainty what she was to do. Let me give you a trifling example. In a certain Central American country is an Indian tribe that buys large quantities of cotton. America failed to sell them. So did Great Britain. So did Germany. But the Germans went back and sent from the textile mill to a university for an ethnologist. What has an ethnologist to do with trade? They put to him this question: "Have these people certain sacred symbols and lucky designs? Have they sacred colors and unlucky ones?" He told them. The German salesman went back and presented to the tribe textiles woven in designs that were familiarly sacred to them and in colors that were consonant with their ideas of good fortune; and he sold them and nobody else ever did. It is common sense, isn't it? Would you send a salesman to Southern Ireland to sell orange-colored goods? Would you send a salesman to Asiatic Turkey to sell textiles with the design of the Sign of the Cross? And yet, we do not think, you and I, we do not think of these things.

EXACT KNOWLEDGE A TRADE NECESSITY.

It is only a month since a great American concern was about to send a color card to China, offering for sale to those Chinese merchants, whose ability to buy and sell those of you who deal in Singapore know perfectly well, offering to send to that class of Chinese trade color cards in which the blue was the coolie blue of China.

When will we learn to apply exact knowledge to our business life? That knowledge in science as well as in research abroad we are able to bring to you; and if there be in your establishment a problem in your own business which you have neither time nor ability, having to earn your living, to work out, we are ready to put a staff of rubber experts, scientific men, trained in our own rubber mill, at work upon the problem in your behalf; and I believe you would say that there is no such industrial research laboratory in the world as that for which President Wilson has recently given to us \$1,150,000 to construct the building alone.

INDUSTRIAL COOPERATION SERVICE WILL GAIN WORLD TRADE.

Thirdly, through the gracious courtesy of the War Industries Board, we have become the beneficiary of a fine legacy for them in our industrial cooperation service. We want to go step by step with you in the conservation work and the standardization work. We will work with you side by side as long as you will do with us. We have not the war power, we do not wish it; but we believe that sweet reasonableness will appeal to American business men, and we believe that there is something else that will appeal because the vision of America has grown larger these recent months. You and I have got to go out into the big world beyond the three-mile limit to earn our livelihood henceforth, because such is the capacity of American industry that when it runs continuously full time, we have not the purchasing power in this country continuously to take its product. We have got to sell abroad, all around the world. That means that your shops and mine—for I am interested as you are in factories—that means that your shops have got to be trimmed like an athlete, down to the bone of power and strength, and that individual fancy and individual love for this or that or the other specialty, may have to stand aside because of the country's need for athletic industry, in which there is no waste, in which there are no fancy trimmings, not because the Government has aught any longer to say, but because the country needs the trained soldier of industry just as it has had the trained soldier of war.

And you and I have got to remember that in our industrial work we must be stripped for battle and set aside weights of personal pride and personal desire in order that the great industries which we represent may take their fair and proper place in the peaceful contests of the world. And this conservation service, this industrial cooperation service in almost any form that industry needs, whether it be scientific help or commercial help, whether it be men or information, is at your command. It is as broad in its possibilities as your needs can be.

And finally, the war powers have gone, let us hope not to return. I do not represent the police power of the Government. I want none of it. I would to God it had never to be used. But if you will cooperate closely with the department whose duty it is to help yourself, help you across the globe or in the laboratory or by its scientific men sent to your own shop, if you will pull with us in this common effort, there is very little danger that any police power can ever come near you. And so I bid you welcome to a department's work in your service that is organized. Do you want a man sent abroad to study your problems? Suggest the man. Take from him his personal interest. Separate him from his personal and selfish duties. Send him to us and let him go freely out into the world, if so be only that

he speaks to you all the while away and on his return, for we cannot serve a single house, but we can and shall be glad to serve the rubber industry of the United States.

PRESIDENT WORK.—A toast to Secretary Redfield! (A rising toast was drunk to Secretary Redfield and the guests sang "For he's a jolly good fellow.")

SECRETARY WORK.—Come to order, please, gentlemen. We have with us to-night another honored guest, Mr. J. Joyce Broderick, Commercial Attaché to the British Embassy. Mr. Broderick has been a good friend of our association through the various phases of the rubber embargo, and our troubles would have been much greater had it not been for the broad-minded view with which he approached the various problems in connection with British control. Mr. Broderick has kindly consented to make a few remarks to us. When he has finished we are going to move away a couple of tables here, and the banquet committee has planned a little further entertainment for you gentlemen.

I take great pleasure in introducing Mr. Broderick.

ADDRESS OF J. JOYCE BRODERICK.

Mr. President, Ladies and Gentlemen:

I am slightly reminded of a story repeated by an English novelist, which told of how a little boy once climbed a rainbow and at the end of the rainbow, behind the clouds, he found a wonderful city. Its houses were of gold and its streets were paved with silver, and the light that shone upon it was like the light that lies on the sleeping world at dawn. And all the men that dwelt in that wonderful city were great and good, and the women were all more beautiful than the women of a young man's dream. And the name of the city was "The City of the Things Men Meant to Do."

ENGLAND THANKS THE AMERICAN RUBBER INDUSTRY.

I do not know whether I should say that I intended to prepare an address which I thought would be befitting an important occasion of this kind, when one of the greatest industries built up by magic in this country of industrial miracles was assembled together to review the achievements that they had accomplished during a period of crisis. But you will probably be glad to hear that I am to address you for only a few moments and I am glad to have them because they give me an opportunity which I have been seeking for a long time, an opportunity to express to the rubber industry of the United States the gratification and the thanks of the government which I have the honor of representing and of the whole British people for the loyal cooperation which we had from you in preventing our enemy from getting rubber or rubber manufactures during a period which to us was of the greatest and most vital importance.

RUBBER GUARANTIES EFFECTIVE.

And I should like to remind you that never during the whole course of what you are all as familiar with as the British rubber agreement, did any British official consider it for a moment necessary to check up the statements you made or to investigate whether you were abiding by your guaranties. I was asked on one or two occasions in the ordinary routine course of inquiry what we were doing to see that those guaranties were observed, and I said: "Nothing. So long as we have the promise of the rubber industry of the United States we can have no better security." And if ever minor questions of difficulty cropped up the chairman of your rubber control committee will bear me out when I say that we did not investigate them, but turned them over to the rubber control committee to dispose of as it pleased.

Now, the experiences we had and the contracts that we were fortunate enough to establish during that period have impressed us with the highest respect for American industry in general and for your particular association more especially. The efficiency of the agreements we made and of the agreements you made later, and the regulations that were arranged with the War Trade Board is illustrated by this: that I do not know of one single authenticated case in which a pound of rubber or rubber manufactures or a single dollar representing the profits on any transaction in rubber ever found its way to the Teutonic countries from the United States since the outbreak of the war.

FRIENDSHIP BETWEEN ENGLISH-SPEAKING PEOPLES.

I believe, ladies and gentlemen, that the common sacrifices which have been made in this war have drawn immeasurably tighter the bond of sympathy between the American and the British people.



J. JOYCE BRODERICK.

The Secretary of Commerce has outlined to you some of the difficulties with which the world is now faced. The question of the means which we must adopt to prevent the recurrence of this awful calamity is a question which is engaging the best minds of the world everywhere. I believe that this question will not be solved except in proportion as the American and the British people agree to cooperate toward their solution. Is it too much to hope that in the conflicting interests and the perplexing problems which are facing the world to-day we may count upon

one constant unchangeable thing, an unbreakable, lasting friendship between the English-speaking peoples? If we can count upon that, I look forward to the future with the greatest confidence, for it is upon the cooperation and unselfish working together of the English-speaking peoples, I believe, that the whole peace and prosperity of the world in the future rests. And I know that I speak the thought of all the British people when I now in conclusion express the sincere hope for the continued growth and prosperity of the rubber industry of America.

MEMBERS AND GUESTS PRESENT.

AT THE PRESIDENT'S TABLE.

Bours, Hon. A. O.,
Redfield, J. Joyce,
Colt, Col. Samuel F.,
Daniel, C. A.,
Daval, Charles J.,
Freestone, H. S.,
Hodgman, George B.,
Hortkiss, Col. H. Stuart
Lambert, John A.,
Looman, John N.,
Neave, Charles,
Carter, R. F.,
Secretary of Commerce,
Shurt, W. A.,
H. B. M. Vice-consul,
Thorne, A. D.,
Wilson, Charles T.,
Work, B. G.

ALPHABETICAL LIST.

Bertuch, Paul,
BeSaw, Charles A.,
Bicknell, W. W.,
Bishop, Erie A.,
Blake, Herbert S.,
Blanchard, J. C.,
Blandin, Jacob C.,
Bochum, M. B.,
Boggs, Charles R.,
Bourn, Hon. A. O.,
Bourn, A. O., Jr.,
Bourn, S. W.,
Bouton, P. V. L.,
Bower, C. M.,
Boyer, Edwin,
Bracker, H. J.,
Brackett, George L.,
Bradley, C. E.,
Brander, Fred L.,
Brander, Harry,
Brander, W. P.,
Braham, John J., Jr.,
Brander, L. W.,
Briggs, C. A.,
Brinkerhoff, E. A.,
Broadwell, E. H.,
Broderick, J. Joyce,
Brooks, E. H.,
Broughton, John S.,
Brown, A. H.,
Brown, Andrew H.,
Brown, J. Stuart,
Brown, J. D.,
Brownell, C. R.,
Bruyn, Frank S.,
Bruyn, W. E.,
Buchanan, Charles,
Bullock, H. P.,
Bullock, H. P.,
Bunker, Gordon,
Bunker, Horace E.,
Burgess, Charles S.,
Burgess, William L.,
Burnham, I. Frank,
Burr, W. E.,
Burroughs, H. L.,
Burrell, W. S.,
Burton, H. P.,
Burton, John,
Russell, A.,
Butler, A. J.,
Butler, C. J.,
Butler, R. C.,
Byles, W. E.,
Byrnes, James W.,
Caldwell, E. M.,
Caldwell, J. C.,
Callahan, J. F.,
Callaway, Fuller E.,
Campbell, Philip H.,
Cannon, M. L.,
Carkhuff, S. G.,
Carleton, W. S.,
Carlisle, C. H.,
Carroll, C. H.,
Carter, R. F.,
Cattmell, Van H.,
Case, C.,
Chadwick, Joseph,
Chandler, J. T.,
Chimman, R. L.,
Chisholm, J. B.,
Clark, C. B.,
Clark, M. H.,
Clark, M. H., and four
guests,
Clements, Dr. R. L.,
Clements, James P.,
Clements, Thomas,
Cline, Fred E.,
Clopper, H. G.,
Cobb, James H.,
Cobb, James H.,
Collins, Charles,
Colt, Col. Samuel P.,
Combs, C. R.,
Coney, M.,
Conlin, A. J.,
Conrad, A. V.,
Conversy, Harry E.,
Cook, C. E.,
Cook, C. M.,
Cook, O. R.,
Cooke, Russell Y.,
Corbin, C. E.,
Corman, C. B.,
Cory, A. Boyd,
Cory, Robert H.,
Cottle, George T.,
Coughlin, E. J.,
Coughlin, Thomas,
Coughlin, T. B., Jr.,
Cranor, R. F.,
Cranor, R. F.,
Crawley, J. T.,
Cummings, H. H.,
Curran, W. L.,
Curran, James,
Cutler, David A.,
D
Daggett, E. M.,
Daggett, Francis S.,
Daniel, C. A.,
Daniel, F. W.,
Daniels, W. B.,
Dann, C. B.,
Dann, D. R.,
Dann, D. R.,
Daum, George W.,
Davis, M. F.,
Davis, Edgar B.,
Davis, H. G.,
Davis, M. F.,
Davis, Oscar C.,
Daval, Charles J.,

Westren, J.,
Wheeler, Shirley M.,
Wheary, W. P.,
Whipple, M. P.,
Whitehead, Alfred,
Whitehead, R. R.,
Whitnack, W. A.,
Whitel, H. H.,
Whiting, W.,
Whitman, R. P.,
Whittaker, William H.,
Whitney, C. B.,
Whitsey, Dr. Theodore,
Whyte, J. A. E.,
Williams, E. S.,
Williams, Frank L.,
Williams, Herbert M.,
Williamson, H. L.,
Wilson, C. Dudley,
Wilson, Charles T.,

Wilson, E. B.,
Wilson, Edgar Hunt,
Winter, Arthur,
Wisell, W. D.,
Wogon, J. F.,
Wood, Charles E.,
Wood, John R.,

Wood, Le Roy,
Wood, Theodore,
Woodward, S. F.,
Woodbury, R. B.,
Woodward, F. K.,
Woodward, H. J.,
Woodward, Van Lear,

Work, B. G.,
Worthington, H. D.,
Yamanaka, S.,
Yotmanagi, E.,
Young, P. E.,
Young, W. H.,
Yule, W. H.

Annual Meeting of The Rubber Association of America.

THE annual meeting of The Rubber Association of America was held at the Waldorf-Astoria, New York City, on January 16, 1919. President Work called the meeting to order and after the call for the meeting, minutes of the previous meeting, report of the president, and the treasurer's report had been accepted, the following announcement was made by Charles T. Wilson:

REPORT OF THE COMMITTEE ON RUBBER AND KINDRED PRODUCTS.

The committee during the past year has continued to cooperate with the War Trade Board and to announce from time to time various regulations prescribed by that body as well as to administer the details connected with the system of rubber control. Their activities have been made the subject of a great many addresses sent you during the year.

Our relations with the Government have been most harmonious and hearty support and cooperation have been shown by the industry in carrying out both in letter and spirit what it was called upon to do.

At the request of the War Trade Board we have at times submitted suggestions and plans for their approval, to cover new situations. Perhaps the most important was that of allocating reduced weights of rubber allowed for importation after May 8, 1918, in as fair a manner as possible.

A short time ago we were able to announce that the present system of guaranties and scheme of control had been much simplified; that while rubber would still continue to be consigned to The Rubber Association, manufacturers and importers are no longer required to furnish individual guaranties, and a number of other formalities were abolished.

I am now much pleased to tell you we have just received word, which I believe will be officially confirmed within the next day or so, to the effect that even this nominal control has been abolished by the War Trade Board and that rubber can now be imported and distributed by observing such regulations as the Government may have in effect from time to time.

PRESIDENT WORK: That means that all regulations are now off except the import license; and, of course, there is still a control over the enemy trade.

MR. WILSON: Yes, sir.

CHANGES IN THE CONSTITUTION AND BY-LAWS.

The following changes in the constitution and by-laws were authorized:

BOARD OF DIRECTORS INCREASED TO FIFTEEN.

Section I of Article IV to read:

The Board of Directors shall consist of fifteen firm representatives who shall be elected at the annual meeting, the directors to be divided into three classes to serve one, two, and three years respectively; those to be elected at the annual meeting of 1919 shall be one director to be added to each of the classes whose terms expire in 1920 and 1921, and five directors to be elected for three years, and thereafter all directors whose terms shall then have expired shall be elected for three years.

APPOINTMENT OF ASSISTANT SECRETARIES.

The following to be added to Section I of Article V:

and as many assistant secretaries as may be found necessary, who shall be elected as above provided, or appointed by the Executive Committee.

This will involve also making the following changes:

Add to Section 3 of Article V a new paragraph reading:

The assistant secretary, or assistant secretaries, shall perform the duties of the secretary in the latter's absence or disability, and such other duties as may be designated by the Board of Directors or by the Executive Committee from time to time.

Change Section 5 of Article V so that it shall read:

Section 5. The office of secretary, or assistant secretary, and treasurer may be held by the same person.

In Section 2 of Article VI, change the third from the last paragraph so as to read:

The secretary, or an assistant secretary of The Rubber Association of America shall be secretary of the Committee on Arbitration.

In Section II of Article IX change the last sentence to read:

Each division may appoint its own chairman or vice-chairman but the secretary or treasurer of each division shall be the secretary or an assistant secretary and treasurer of this association.

GIVING BOARD OF DIRECTORS AND EXECUTIVE-COMMITTEE EQUAL POWER.

Change the third sentence in Section 1 of Article VI so that it shall read:

The Executive Committee shall, when the Board of Directors is not in session, pass on all elections to membership.

Change the last sentence of Section 1 and the last sentence of Section 2 of Article VIII, so that those sentences shall read:

The endorsement of two directors and a majority vote of the Board of Directors or of the Executive Committee shall be necessary for admission.

Change the first sentence of Article XII so that it shall read:

Entertainments and dinners of the Association may be held at the discretion of the Board of Directors or of the Executive Committee.

Change Article XIV so that it shall read as follows:

If any member shall be charged in writing (addressed to the secretary of the Association) by any other member of the Association with conduct injurious to the good order, welfare, interest or character of the Association or with acts inimical to the interests of the Association and tending to discredit it, or with acts at variance with the requirements of the charter, constitution and by-laws or rules of this Association, or if the Board of Directors or the Executive Committee shall be cognizant of such conduct and acts and prefer charges, the Board of Directors or the Executive Committee shall thereupon inform the member so charged in writing; and if, after giving the person so charged an opportunity to be heard, the Board of Directors or the Executive Committee shall be satisfied of the truth of the charges and that the same demands such action, it may proceed to expel such member or to suspend such member for a period not exceeding six months, or it may request such member to resign; and if such member declines to resign it may proceed to expel him; a two-thirds vote of the entire Board of Directors or of the entire Executive Committee shall be required to expel or suspend.

NEW BOARD OF DIRECTORS.

The four nominees of the nominating committee and the three nominees of members of the association were elected members of the board of directors, the personnel of which follows:

Expiring in 1920: Homer E. Sawyer, chairman; Charles T. Wilson, John A. Lambert, Paul W. Litchfield, G. W. Henne.
Expiring in 1921: Frank A. Seiberling, Harry T. Dunn, Charles J. Davol, William J. Kelly, C. W. MacLaughlin.
Expiring in 1922: J. Newton Gunn, Seneca G. Lewis, J. S. Lowman, A. D. Thornton, John Morgan.

INCOME PROVIDED FOR SUPPORT OF ASSOCIATION.

In order to raise sufficient funds for the continuance of the work of the Association the following plan was proposed:

WHEREAS, it is necessary to provide a sufficient income for the continuance of the growing activities of this Association

Officials and Board of Directors of the Rubber Association of America, Inc.



J. A. LAMBERTI.



J. S. LOWMAN.



S. G. LEWIS.



P. W. LITCHFIELD.



HARRY T. DUNN.
First Vice-President.



HOMER E. SAWYER.
President.



FRANK A. SEIBERLING.
Second Vice President.



C. J. DAVOL.



C. T. WILSON



Underwood & Underwood, N. Y.
H. S. VORHIS.
Secretary-Treasurer.



W. J. KELLY



G. W. HENNE.



J. N. GUNN.



J. MORGAN.



A. D. THORNTON.



Underwood & Underwood, N. Y.
C. W. MACLAUGHLIN.

ciation, and to permit of the accumulation of an invested fund, be it

RESOLVED, that this meeting approves of the charge of a nominal fee of not less than two cents, not more than three cents, per hundred pounds, on all rubber arriving and shipped to manufacturers, and not consigned to The Rubber Association, and be it further

RESOLVED, that the Board of Directors of The Rubber Association be instructed to prepare an equitable plan for this distribution of the cost of and collection of said fee.

After a short discussion the above resolution was unanimously adopted.

PRESIDENT WORK'S CLOSING REMARKS.

PRESIDENT WORK: Now, gentlemen, I want to express my thanks and appreciation to you all for the support you have given me during the past year. It has been a great honor to be president of The Rubber Association during this time. I have enjoyed the work, and I have valued the cooperation and admired the spirit which has actuated the whole country; and from various sources in Washington we hear that no industry in the country gave the Government better support than the rubber industry. I am very proud to have acted as your president during the year. I thank you.

DIRECTORS' MEETING.

THE new board of directors went into session after the annual meeting and elected the following officers:

OFFICERS.

President, Homer E. Sawyer, United States Rubber Co., New York City.

First vice-president, Harry T. Dunn, The Fisk Rubber Co., Chicopee Falls, Massachusetts.

Second vice-president, Frank A. Seiberling, The Goodyear Tire & Rubber Co., Akron, Ohio.

Secretary-treasurer, Harry S. Vorhis, The Rubber Association of America, Inc., New York City.

EXECUTIVE COMMITTEE.

Homer E. Sawyer, chairman, United States Rubber Co., New York City; Harry T. Dunn, The Fisk Rubber Co., Chicopee Falls, Massachusetts; Frank A. Seiberling, The Goodyear Tire & Rubber Co., Akron, Ohio; Bertram G. Work, The B. F. Goodrich Co., New York City; John A. Lambert, Acme Rubber Manufacturing Co., Trenton, New Jersey; William J. Kelly, Poel & Kelly, New York City.

FIRM AND ASSOCIATE MEMBERS ELECTED.

The following firm and associate members were elected on January 16, 1919:

FIRM MEMBERS AND REPRESENTATIVES.

Century Rubber Works, E. B. Tozier, 1346 Rawson street, Chicago, Illinois.

Narragansett Rubber Co., R. S. Emerson, Bristol, Rhode Island.

Needham Tire Co., H. A. Rambonnet, Charles River, Massachusetts.

Trenton Scrap Rubber Co., Isaac Fineburg, Trenton, New Jersey.

United States Rubber Plantations, Inc., Ernest Hopkinson, 1790 Broadway, New York.

Chippewa Rubber Co., Edward Hutchins, Eau Claire, Wisconsin.

The McLean Tire & Rubber Co., W. B. Davis, East Liverpool, Ohio.

The Columbia Tire & Rubber Co., W. G. Henne, Columbiana, Ohio.

Pivin Tube & Rubber Co., A. S. Johnson, 1002 Michigan avenue, Chicago, Illinois.

The Marion Tire & Rubber Co., W. H. Holverstott, Marion, Ohio.

Fred T. P. Waterhouse, Fred T. P. Waterhouse, 82 Wall street, New York City, was transferred from associate to firm membership.

ASSOCIATE MEMBERS.

Arthur W. Lawrence, United States Rubber Co., 1790 Broadway, New York City.

DIVISIONS' MEETINGS.

MEETINGS of the following divisions were held on January 15 and 16, 1919, and officers elected for the ensuing year:

MECHANICAL RUBBER GOODS MANUFACTURERS' DIVISION: John J. Voorhees, chairman, Voorhees Rubber Manufacturing Co., Jersey City, New Jersey; W. H. Yule, vice-chairman, The B. F. Goodrich Co., Akron, Ohio; Harry S. Vorhis, secretary and treasurer, The Rubber Association of America, Inc., New York City. EXECUTIVE COMMITTEE: J. J. Voorhees, chairman, Voorhees Rubber Manufacturing Co., Jersey City, New Jersey; George E. Hall, Boston Woven Hose & Rubber Co., Cambridge, Massachusetts; Guy E. Norwood, The Republic Rubber Corp., Youngstown, Ohio; Henry Spadone, Gutta Percha & Rubber Manufacturing Co., New York City; W. H. Yule, The B. F. Goodrich Co., Akron, Ohio; J. H. Cobb, New York Belting & Packing Co., New York City; I. R. Bailey, The Goodyear Tire & Rubber Co., Akron, Ohio; John A. Lambert, Acme Rubber Manufacturing Co., Trenton, New Jersey.

SOLID TIRE MANUFACTURERS' DIVISION.—The Solid Tire Manufacturers' Division was organized and the following officers elected: A. J. Partridge, chairman, Firestone Tire & Rubber Co., Akron, Ohio; Joseph C. Weston, vice-chairman, United States Tire Co., New York City; H. S. Vorhis, secretary and treasurer, The Rubber Association of America, Inc., New York City. EXECUTIVE COMMITTEE: A. J. Partridge, chairman, J. C. Weston, and representatives of The Fisk Rubber Co., The B. F. Goodrich Co., The Goodyear Tire & Rubber Co., Hood Rubber Co., and the Kelly-Springfield Tire Co.

PNEUMATIC TIRE MANUFACTURERS' DIVISION.—The Pneumatic Tire Manufacturers' Division was organized and the following officers elected: George M. Stadelman, chairman, The Goodyear Tire & Rubber Co., Akron, Ohio; E. H. Broadwell, vice-chairman, The Fisk Rubber Co., Chicopee Falls, Massachusetts; Harry S. Vorhis, secretary and treasurer, The Rubber Association of America, Inc., New York City. EXECUTIVE COMMITTEE: George M. Stadelman, chairman, E. H. Broadwell, and representatives of the Kelly-Springfield Tire Co., Empire Rubber & Tire Co., Hood Rubber Co., The Miller Rubber Co., Portage Rubber Co., Firestone Tire & Rubber Co., General Tire & Rubber Co., Ajax Rubber Co., Inc., The B. F. Goodrich Rubber Co., Pennsylvania Rubber Co., United States Tire Co., Lee Tire & Rubber Co., and the Victor Rubber Co.

RUBBER RECLAIMERS' DIVISION: Francis H. Appleton, chairman, F. H. Appleton & Sons, Inc., Boston, Massachusetts; Clark W. Harrison, vice-chairman, Bloomingdale Rubber Co., New York City; Harry S. Vorhis, secretary and treasurer, The Rubber Association of America, Inc., New York City. EXECUTIVE COMMITTEE: Francis H. Appleton, chairman; Clark W. Harrison, vice-chairman; E. A. Anderson, Rubber Regenerating Co., Naugatuck, Connecticut; John S. Clapp, E. H. Clapp Rubber Co., Boston, Massachusetts; R. A. Low, United States Rubber Reclaiming Co., Inc., New York City; John S. Lowman, Philadelphia Rubber Works Co., Akron, Ohio; Joseph F. McLean, Pequannoc Rubber Co., Butler, New Jersey.

RUBBER SUNDRIES MANUFACTURERS' DIVISION.—Charles J. Davol, chairman, Davol Rubber Co., Providence, Rhode Island; H. A. Bauman, vice-chairman, The B. F. Goodrich Co., Akron, Ohio; Harry S. Vorhis, secretary and treasurer, The Rubber Association of America, Inc., New York City. EXECUTIVE COMMITTEE: Charles J. Davol, chairman, Davol Rubber Co., Providence,

Rhode Island; Edward E. Huber, Eberhard Faber Pencil Co., Brooklyn, New York; S. H. Jones, United States Rubber Co., New York City; George B. Hodgman, Hodgman Rubber Co., Tuckahoe, New York; W. H. Balch, The Faultless Rubber Co., Ashland, Ohio; W. S. Davison, The Miller Rubber Co., Akron, Ohio.

FOREIGN TRADE DIVISION: E. H. Huxley, chairman, United States Rubber Export Co., Ltd., New York City; R. H. Daniels, vice-chairman, The Goodyear Tire & Rubber Co., Akron, Ohio; Harry S. Vorhis, secretary and treasurer, The Rubber Association of America, Inc., New York City. **EXECUTIVE COMMITTEE:** E. H. Huxley, chairman, United States Rubber Export Co., Ltd., New York City; Henry G. Tyer, Tyer Rubber Co., Andover, Massachusetts; William B. Loughton, Hood Rubber Co., Watertown, Massachusetts; A. R. Gormully, Ajax Rubber Co., Inc., New York City; A. S. Hardy, Manhattan Rubber Manufacturing Co., New York City; R. H. Daniels, The Goodyear Tire & Rubber Co., Akron, Ohio; C. G. McCullough, Pennsylvania Rubber Co., Jeannette, Pennsylvania.

RUBBER PROOFERS' DIVISION:—H. M. Dannenbaum, chairman, Schwarzwaelder Co., Philadelphia, Pennsylvania; J. J. Clifford, vice-chairman, Plymouth Rubber Co., Canton, Massachusetts; Harry S. Vorhis, secretary and treasurer, The Rubber Association of America, Inc., New York City. **EXECUTIVE COMMITTEE:** H. M. Dannenbaum, chairman; J. J. Clifford; E. Bucher, Vulcan Proofing Co., Brooklyn, New York; J. V. McHose, Scioto Rubber Co., Columbus, Ohio; James Meade, Meade Rubber Co., Stoughton, Massachusetts.

FOOTWEAR DIVISION.

The following is the personnel of the newly organized Footwear Division: George H. Mayo, chairman, United States Rubber Co., 1790 Broadway, New York City; Francis S. Dane, vice-chairman, Hood Rubber Co., Watertown, Massachusetts; Harry S. Vorhis, secretary, The Rubber Association of America, New York City; Hugh Bullock, Converse Rubber Shoe Co., Malden, Massachusetts; Robert S. Emerson, Narragansett Rubber Co., Bristol, Rhode Island; A. S. Funk, La Crosse Rubber Mills Co., La Crosse, Wisconsin; W. G. Hill, Apsley Rubber Co., Hudson, Massachusetts; T. W. McDowell, Goodyear Rubber Co., Middletown, Connecticut; L. T. McCollum, Mishawaka Woolen Manufacturing Co., Mishawaka, Indiana; Francis R. McKenna, Bourn Rubber Co., Providence, Rhode Island; Ted Nicar, Firestone Tire & Rubber Co., Akron, Ohio; George W. Prall, Lambertville Rubber Co., Lambertville, New Jersey; J. A. Rishel, The B. F. Goodrich Co., Akron, Ohio; L. C. Warner, Beacon Falls Rubber Shoe Co., Beacon Falls, Conn.

TRAFFIC DIVISION.

The Traffic Division meetings were held at the Transportation Club, Manhattan Hotel, New York City, on January 15 and 16, when the following subjects in connection with domestic and foreign transportation problems were discussed: Advance in express rates; proposed elimination of exceptions to the official classification; standardization of statistical accounts in individual traffic departments of the association members and compilation of various statistics in this office; marking of cases containing crude rubber; trans-continental rates on rubber soling; trans-continental rates on rubber mats and matting; rates on crude rubber; ratings on tires under the Iowa State classification; consolidated classification as related to rubber and its products; permits for carload export shipments; lighterage of export freight in New York harbor; demurrage and storage in connection with export freight; priority movement for export freight in carloads; packing of rubber belting and hose; differential rates for export and import freight; rubber packing and tubing.

The Traffic Committee is composed of the following members: George F. Hitchborn, chairman, United States Rubber

Co., 1790 Broadway, New York City; R. G. Kreitzler, The Goodyear Tire & Rubber Co., Akron, Ohio; A. D. Phillips, The Fisk Rubber Co., Chicopee Falls, Massachusetts; E. R. Tragesser, The B. F. Goodrich Co., Akron, Ohio; A. L. Viles, manager, 52 Vanderbilt avenue, New York City; Harry S. Vorhis, treasurer, The Rubber Association of America, Inc., New York City.

RUBBER HEEL CLUB.

A meeting of the Rubber Heel Club of America was held at the Yale Club, New York City, on January 16, 1919. The officers are: president, Robert H. Cory, O'Sullivan Rubber Co., New York City; secretary, George H. Stetson, 370 Atlantic avenue, Boston, Massachusetts; directors: Robert H. Cory, O'Sullivan Rubber Co., New York City; C. H. Oakley, Essex Rubber Co., Trenton, New Jersey; Charles Measure, Federal Rubber Co., Milwaukee, Wisconsin.

COMMUNICATIONS OF THE RUBBER ASSOCIATION WAR SERVICE COMMITTEE DISCHARGED.

January 3, 1919.

To all members of the rubber trade:

The board of directors of The Rubber Association of America has decided that the work of the War Service Committee of the Rubber Industry shall terminate at the time of the annual meeting of the Association, January 16, 1919.

BLANKET GUARANTIES REQUIRED.

January 6, 1919.

To importers, dealers and manufacturers:

The War Trade Board has authorized a marked simplification in the procedure covering the disposition of rubber arrivals. Instead of individual guaranties, as now required from manufacturers and importers against each delivery, blanket guaranties, as per form "A" for manufacturers and form "B" for importers, will be all that is necessary from those whose guaranties have heretofore been acceptable to the War Trade Board.

FORM A.

MANUFACTURER'S GUARANTY.

WAR TRADE BOARD,

Washington, D. C.,

Through the Rubber Association of America, Inc.

GENTLEMEN:

In consideration of your consenting to the delivery to me/us of crude rubber, gutta jelutong, scrap or reclaimed rubber, gutta percha, gutta siak and/or balata I/we agree to comply with all regulations of the War Trade Board as now in force or which may be promulgated affecting the importation and exportation of the foregoing commodities and manufactures thereof and to furnish on demand such information as the War Trade Board may require concerning the importation and disposition of said commodities and the manufactures thereof.

(Signature of manufacturer.)

Date

FORM B.

IMPORTER'S GUARANTY.

WAR TRADE BOARD,

Washington, D. C.,

Through the Rubber Association of America, Inc.

GENTLEMEN:

In consideration of your granting to the undersigned licenses to import crude rubber, gutta jelutong, scrap or reclaimed rubber, gutta percha, gutta siak and/or balata I/we hereby agree to comply with all regulations of the War Trade Board as now in force, or which may be promulgated, affecting the importation and exportation of the foregoing commodities and to furnish on demand such information as the War Trade Board may require concerning my/our importation and disposition of such commodities.

I/we also agree not to dispose of any of the aforesaid commodities except to such firms or individuals as shall have executed the agreements required by the War Trade Board.

(Signature of importer.)

Date

The following formalities, heretofore required, are dispensed with:

1. Filing of importers' and manufacturers' guaranties against each delivery.
2. Filing by importers with the Association of transportation or other receipt as proof of delivery.
3. Receipts from manufacturers.
4. Warehousing of rubber in the name of the Rubber Association of America, Inc., by importers.

leaving the control exercised by the War Trade Board substantially as follows:

- (a) Conditions outlined in the guaranty.
- (b) All rubber shall continue to be consigned to The Rubber Association of America, Inc.
- (c) Importers to make application for endorsement of bill of lading on Form "C," and if required by the War Trade Board, to report the disposition of the commodity covered by the bill of lading.
- (d) Importing manufacturers will make application for endorsement of bill of lading on Form "D."
- (e) The Association will enter the particulars given in said application upon their records for the information of the War Trade Board.

Manufacturers will please sign Form "A" and importers Form "B" and return as early as possible.

Inasmuch as this will do away with a great deal of clerical work now employed in keeping the records, a substantial decrease, effective January 10, 1919, in certain registering charges, has been authorized by the executive committee of the Association. They will be as follows:

Crude rubber, balata and gutta percha.....5c per 100 lbs.
Gutta siak and Pontianak.....2½c per 100 lbs.

Supplies of forms "C" and "D," to be used for making application for endorsement of bill of lading, can be obtained upon request to the secretary.

CRUDE RUBBER IMPORTS PRACTICALLY UNRESTRICTED.

JANUARY 20, 1919.

To importers, brokers and dealers:

The following two advices of importance have been received from the War Trade Board:

(a) Circumstances have now permitted the removal of the control which the War Trade Board has previously exercised through this Association over importations of crude rubber, jelutong, balata, gutta siak, gutta percha, scrap and reclaimed rubber.

Hereafter, therefore, import licenses for these commodities will not require that bill of lading be endorsed to the Association, and Collectors of Customs have been advised to disregard this provision on all outstanding licenses for said commodities.

(b) The War Trade Board announce that, effective immediately, all American Consuls have been instructed to consulate invoices covering all unrestricted commodities without the necessity of the production of United States import license number.

This will make it unnecessary for importers to cable license numbers on unrestricted commodities and thereby simplify the import procedure.

All Collectors of Customs have been advised of the withdrawal of this regulation, and furthermore instructed to permit entry of merchandise covered by unused and outstanding licenses for unrestricted commodities provided license is otherwise in order, without regard to license numbers.

The War Trade Board desires to impress upon importers for their own protection and to avoid the possibility of shipments being made for which license may be refused, on account of failure to observe the enemy trade regulations, or for other reasons, that they should obtain import licenses before shipments are effected.

From the contents of the above it will be observed:

1. That shipments of the commodities mentioned should no longer be consigned to The Rubber Association of America.
2. That importers of crude rubber are no longer under the necessity of cabling license number to their shippers.

COMMITTEE ON RUBBER & KINDRED PRODUCTS.

"Rubber Machinery," by Henry C. Pearson, is filled with valuable information for rubber manufacturers. Price, \$6.

RUBBER FOOTWEAR SEASON IN CANADA.

The revised price list on rubber footwear has been issued in Canada a month earlier than usual, pursuant to an agreement made by the middle western jobbers with the manufacturers. This permitted salesmen in Manitoba, Saskatchewan, and Alberta to start out on January 15 with both rubber and felt lines. No samples will be carried, all sales being made from catalogs, thus saving expense and time. The fact that there are practically no new styles this year made this procedure possible.

The season in British Columbia, Ontario, Quebec, and the Maritime provinces will open March 3 as usual.

THE DUNLOP GREATER PRODUCTION PLAN.

In 1914, the Dunlop Tire & Rubber Goods Co., Limited, Toronto, Ontario, increased its property holdings by leasing 14 acres in East Toronto, primarily as a recreation ground. Events since then have made it desirable to use part of the space for gardening. About eight acres are now under cultivation, the balance being used by the Dunlop Amateur Athletic Association for all kinds of outdoor sports. The first gardens were laid out in the spring of 1914, before the war started. No less than one hundred gardens are being worked, with the possibility of half as many more for next spring. The Toronto Rotary Club has assisted in the garden work. One Dunlop employee produced on his plot, during 1918, the following vegetables: 18 bags of



A PART OF DUNLOP FIELD IS DEVOTED TO EMPLOYEES' GARDENS.

potatoes, 700 pounds of turnips, 200 pounds of parsnips, 300 pounds of carrots, 500 pounds of beets, 100 pounds of dried beans, 75 pounds of string beans, one-half ton of onions, 15 baskets of tomatoes, 300 cabbages, 85 heads of celery, lettuce and radishes by the bagful, brussels sprouts, etc.

The Dunlop company also operates a large lunch-room where hot coffee is served daily to employees who bring their lunch. There is, in addition, a lunch-room for the office staff where a wholesome meal can be had at less than cost. Adjoining are a reading and rest-room and a fully equipped hospital-room with a qualified nurse in attendance.

Bowling has been encouraged and also all sporting events having to do with the bicycle, motorcycle, or automobile. The Dunlop trophy race is an example of the extent to which the company goes in promoting the automobile or bicycle business, besides its prizes for sporting events throughout Canada.

A successful picnic, many football matches and various events in aid of the community have been held on Dunlop Field.

SWEDISH FACTORY DOUBLES CAPITAL.

The Helsingborg Rubber Manufacturing Co. of Helsingborg, Sweden, has recently increased its capital from 3,000,000 to 6,000,000 kroner.

Guayule Cultivation a Success.'

In response to scores of requests the following article, written by the Editor of THE INDIA RUBBER WORLD, which appeared in this paper in July last, is reprinted. The writer is well aware that the story is startling and almost unbelievable, but after further examination of existing plantings, he discovers no reason to change the opinion first formed or in any way to modify the original statements.

ONE must go back at least ten years. Of all the companies operating in Mexico, one was preeminent, in product, processes, and in vast holdings of land. It was an American concern, with ample capital, and unusual administrative talent. To those in charge it was perfectly apparent that the time would come when the wild guayule fields would be exhausted and the business stop entirely or shut down until new plants matured. Whether regrowth could be induced or the shrub be raised from seed or cuttings, none knew. Most of those who were asked con-

established laboratories and experimental plants, and the work on a commercial scale actually commenced.

Prior to the actual planting for commercial product, the plant was practically remade to meet the necessities in the case.

AS TO SEED SUPPLY.

The seed of the guayule is very minute, and if one examines the desert plant, very unsatisfactory. In the heads that should hold good seeds will be found half-developed dried husks of seeds and very few good ones. As vital seed, and plenty of it,



GUAYULE SEED BEDS.

cerning this were positive in their declarations that it would never yield to profitable cultivation. The actual head of the company, a man of broad vision, although careful and conservative, believed that with sufficient effort the impossible could be done. Under his direction, therefore, the work was begun.

MEXICAN PRELIMINARIES.

The first thing was the selection of a crop of chemists, botanists, plant physiologists, and experts in desert plants. For this they drew men from agricultural colleges, desert laboratories and experiment stations, arranging to send their notes and conclusions to these seats of botanical learning, receiving from them knowledge in return. This body of men, which was added to from time to time, embraced such well-known names as Dr. Francis E. Lloyd, Dr. Theodore Whittelsey, Dr. J. E. Kirkwood, Professor C. L. Hare, Professor J. P. C. Southall, Dr. W. B. McCallum and half a score of others.

These scientists took up the following subjects and exploited them most thoroughly. Geographical and altitudinal distribution, climate, air and soil temperatures, rainfall, soil moisture, and relative humidity, analysis of soils and of plants under all conditions, diseases, effects of drouth, rain and of irrigation; seeds, leaves, flowers, stems and roots were subjected to the closest scrutiny, under a multiplicity of conditions, and the results all tabulated.

In time their work begun in Mexico was transferred to the United States, notably to California and Arizona. Here were

is an essential, the guayule trainers took hold of the shrub, planted it under varying conditions, fed, watered, starved, and petted it until it was learned positively just what conditions were necessary to full seed pods. In time the barren seed vessels became full ones, and the treatment necessary to get this result became a matter of record.

GERMINATION.

It may not be generally known, but seeds of some plants, seeds that are vital, and that should germinate without difficulty, refuse to do so. This seems to be particularly true of certain desert growths. For example, there is a cactus distributed very generally through the southwest that bears seeds in abundance. So far, however, no one has been able to get these seeds to germinate. It was not on the cards that guayule should prove to be in this class. It promised so many other disabilities that it did not seem possible that it had this also. Nevertheless when the first bushel of seeds was carefully sown not one germinated. And so it was with succeeding lots. There was nothing to do but sow smaller lots under every condition that could be thought of, and learn just what was required. For a long time only failure resulted and gloom settled on the experimenters. Then an accident pointed the way and soon this problem, too, was solved.

SPEEDING UP THE GROWTH.

The problem of speeding up the growth of the plant was one of the most interesting and vexing of all. Left to itself in its desert home under normal conditions, a guayule seedling takes some twenty years to arrive at maturity, that is, as a rubber-bearing proposition. It grew a little at a favorable season each

*From "Production of Guayule Rubber," by Henry C. Pearson. Commerce Report No. 149, June 26, 1918.

year. The rest of the time it existed, did not grow, nor do anything but sleep. Now, it is exceedingly difficult to get tree, shrub, or plants to do anything that they and their forebears have not previously done. They are hidebound in their prejudices, rock-ribbed as to their habits. They have no ambition to speed up, to be efficient, to be different. These plant prejudices must first be understood and habits broken by coaxing, cajoling and fooling. For example, the guayule habit of a slight growth in the spring once a year was noted by the plant physiologist, who took advantage of it in this way. He furnished a simulated spring and the guayule responded, then before it could settle back for months of rest, another spring was sprung. If done at the exact psychological moment the plant responds. Again and again was this done, and the plant, having no method of checking up its rapidly recurring seasons, attained a lusty growth in record time. By this method the fifteen-year development that the shrub was accustomed to, and that it prefers, was accomplished in four years.

VARIETIES OF SHRUBS.

One of the very interesting preliminaries in guayule cultivation was the study of varieties. To the average guayule expert there were but two types of plants, the *Parthenium Argentatum* which is the rubber producer, and the *Mariola*, *Parthenium Icamum*, which much resembles it but contains no rubber. From the beginning, the botanists began to segregate the rubber-producing species into a great variety of types. The new species, the *Parthenium Lloydii*, named after Professor Francis E. Lloyd, is one of these varieties, characterized by differences in leaf, flower, root growth, rubber content, etc., etc. Dr. McCallum, in whose desert laboratory the most of this work was done, published a statement in "Science" long ago that he had found 125 different species.* He told the writer that his records showed to date more than 900 different guayule growths and that the list was still growing.

THE RUBBER CONTENT.

From the beginning of the experiments much care was taken in the analysis of thousands of shrubs to learn all that could be

over. The facts tabulated showed that there was a wide difference in the amount of rubber in the different shrubs. This ran from one per cent to ten per cent to twenty per cent, and in rare cases to twenty-seven per cent. Manifestly seed from the one per cent would not pay to collect, much less to plant. The poorer qualities were therefore thrown out and plants that were big producers were selected as seed bearers for the future cultivated shrub.

QUALITY INVESTIGATION.

Guayule rubber has not been considered to be of the highest grade. When it first came upon the market its resin content was so high and it was so soft that it was accepted with reluctance. Indeed certain importers for years refused to allow that it was rubber at all and scornfully dubbed it a substitute. In time, however, by new methods of extraction, and by deresination, it came into its own as a valuable crude rubber and was used by the millions of pounds.

The searchers for guayule secrets, when they began to test the quality of the rubber in different plants, learned some more surprising truths. Some of the shrubs gave simply a black resinous paste that contained not enough rubber for extraction. Others contained rubber with say twenty per cent of resin, the type that the whole trade is familiar with. A few, however, yielded a firm hard product, low in resin and showing to a remarkable degree the "nerve" that is so characteristic of the best crude rubber.

The result was, of course, that the best producers were planted as seed bearers for cultivated guayule.

Nor was that all. By hybridization, that is the wedding of the big producers with the best producers, plants were produced that had the good qualities of each. Therefore with a big, best producing seed stock the real cultivation of guayule was well on the way toward success.

SOLVING THE LABOR PROBLEM.

In an age when almost everything is done by machinery, the growing of india rubber, particularly the tapping and gathering, is hand work entirely. Without vast gangs of coolies the production of rubber in any considerable amount seems impossible.



A FIELD OF CULTIVATED GUAYULE.

learned concerning the rubber content in them. First of all, the portions of the plants containing rubber were cataloged. This was important in determining whether it was wiser to uproot the plant for the sake of the rubber in the roots or to cut it off above the roots, leaving them to produce new growths. With cultivation in sight, however, there was much more to be learned than the portion of the plant richest in rubber. That was whether the ten per cent of rubber, the rough estimate of the whole rubber content, was at all variable. The results of the analyses were so astounding that they were done several times

With the cultivation and collection of guayule rubber, however, machinery takes the place of men, and in almost every part of the work. The preparation of the fields is done by disk harrows drawn by tractors. The planting by specially built machines, similar to tobacco planters that plow four furrows, set the plants at the proper intervals, cover them in and pack the earth about the roots. One machine plants eighteen acres a day. The cultivating is also done by machinery. For gathering there are two systems; one cutting the rows down by a harvesting machine, the other plowing the plant out root and all, as in the harvesting of

the sugar beets. The extraction of the rubber is also, of course, wholly mechanical. In the event that the rubber is desinated, that is also done by machinery and follows the well-known process.

Guayule growing in a large plantation involves a laboratory for examining and testing plant and product, a small greenhouse for seed experiment and hybridization, outdoor plants for seed bearing, seed beds protected by lattice windbreaks, an irrigation system, planting and harvesting machinery, an extraction plant, and above all, knowledge of the plant, and how to handle it, and plenty of capital.

RUBBER TRADE INQUIRIES.

THE inquiries that follow have already been answered; nevertheless they are of interest not only in showing the needs of the trade, but because of the possibility that additional information may be furnished by those who read them. The editor is therefore glad to have those interested communicate with him.

(686.) A manufacturer inquires where he can buy black stamping ink for use on cold-cured pure gum articles, the ink to be unaffected by the curing solution and not to rub off after goods have dried.

(687.) A correspondent desires the address of the manufacturer of Brandt's cement.

(688.) An inquirer asks for the addresses of concerns furnishing supplies for the manufacture of rubber stamps.

(689.) A request has been received for the addresses of concerns that can use hard-rubber battery jars as scrap material.

(690.) A subscriber requests the addresses of several manufacturers of combination stoppers for hot-water bottles.

(691.) A correspondent desires plans for model rubber-tire manufacturing plants.

(692.) A subscriber asks where he can purchase machinery for the manufacture of hard-rubber combs.

(693.) A manufacturer requests the addresses of makers of aluminum inner-tire poles.

(694.) A correspondent desires addresses of manufacturers of bone naphtha or Dippel's oil.

(695.) A correspondent inquires for the addresses of concerns manufacturing tread-punching and stud-setting machines.

(696.) An inquiry has been received for data or the name of some standard work dealing with figuring costs for the production of rubber tape and coated fabrics.

TRADE OPPORTUNITIES FROM CONSULAR REPORTS.

Addresses may be obtained from the Bureau of Foreign and Domestic Commerce or its district or cooperative offices. Request for each should be on a separate sheet, and state number.

(27,917.) A commercial agent in the Netherlands wishes to secure an agency for the sale of rubber goods, first and second qualities, for technical and surgical purposes. Terms, cash with discount of 2½ per cent, or 30 days, 2 per cent discount. Correspondence may be in English.

(27,933.) A man in France desires to secure an agency for or will purchase raincoats. Terms, payment against documents. Correspondence should be in French.

(27,943.) An agency is desired by a man in Norway for the sale of elastic webbing. Quotations should be made f. o. b. New York. Payment to be made cash against documents, confirmed New York credits established. Correspondence may be in English.

(27,956.) A man in Italy desires to secure an agency for the sale of all rubber articles for druggists. Correspondence should be in French or Italian.

(27,958.) A citizen of Costa Rica, who is at present in the United States and about to return to that country and Cuba as

a traveling salesman, desires to secure agencies for the sale of automobile supplies. Terms, cash in New York.

(27,959.) An agency is desired by a man in France for the sale of motor-car accessories throughout Roumania and the Balkan States. Correspondence in French preferred.

(27,962.) An agency is desired by a man in Italy for the sale of rubber goods of all kinds. Correspondence may be in French and Italian.

(27,964.) A partner of an import and export firm in France, who is now in this country, wishes to be placed in communication with large manufacturers with a view to securing agencies for the sale of rubber goods.

(27,988.) A firm in France desires to purchase, for immediate delivery, motorcycle and bicycle accessories. Terms, cash in New York.

(28,016.) A man in Italy desires to secure an agency for the sale of rubber articles. Correspondence should be in French or Italian.

(28,035.) A business man in Algeria desires to purchase or secure an agency on commission for the sale of raincoats for men. Correspondence may be in English.

(28,036.) A man in Italy desires to purchase or secure an agency for the sale of motorcycle accessories. Cash will be paid. Correspondence should be in Italian or French.

(28,051.) An agency is desired by a man in France for the sale of automobile accessories. Correspondence may be in English.

(28,054.) A firm in Italy desires to purchase and also secure an exclusive agency for solid rubber tires for passenger cars and trucks. Correspondence should be in Italian.

(28,080.) A Frenchman, who is now in this country, desires to secure an agency for automobile accessories.

(28,081.) A firm in Italy desires to secure an agency for the sale of automobile accessories. Correspondence should be in French or Italian. Catalogs should be sent and samples also, where possible.

(28,089.) A man in Italy desires to secure an agency for the sale of bicycle accessories. Correspondence may be in English.

(28,093.) A firm in Italy desires to purchase or to secure an agency for the sale of rubber tires. Quotations should be made f. o. b. Terms, cash, with discount, through bank. Correspondence may be in English.

(28,095.) A firm of Chinese merchants in Trinidad desires to secure an agency for the sale of rubber tires.

(28,106.) An agency is desired by a man in France for the sale of motor-car accessories and belts. Correspondence should be in French.

(109,220.) A market for inexpensive toys exists in Algeria; also for sporting goods, and games. A list of the principal dealers in toys may be obtained from the Bureau of Foreign and Domestic Commerce or its district and cooperative offices.

UNITED STATES GOVERNMENT SALES.

The Material Disposition Section, Chemical Warfare Service, U. S. A., 19 West 44th street, New York City, offers the following equipment and material for sale:

A newly constructed steel building, with its equipment, located in Astoria; material from several large plants in Long Island City, formerly employed in making gas masks, gas and other products. Also grinding material, leather belting, shafts, locomotive cranes, cloth cutting machines, cloth presses, rubber testing machines, laboratory apparatus and chemicals, lathes, milling and sewing machines, platen cutting and creasing presses, piping and fittings, rubberized fabrics suitable for raincoats, ponchos, rubber boots and high-grade rubber specialties, fabrics used in manufacturing gas masks, specially prepared fabrics, absolutely waterproof binder fabric suitable for raincoats, elastic tape, chemicals, steel drums, laundry machinery and all classes of office furniture and accessories.

In addition, about forty carloads of gas masks, besides their parts, are scheduled to be sold at the highest bidders.

Echoes of the Great War.

SUPPLEMENTAL INFORMATION SHEET X-2 NO LONGER REQUIRED.

THE War Trade Board announced under date of January 4, 1919 (W. T. B. R. 477), that applicants for export licenses will no longer be required to attach to their application Supplemental Information Sheet X-2, except in the case of applications for the exportation of arms, ammunition or explosives.

PROCEDURE GOVERNING EXPORTS TO HOLLAND AND DENMARK.

The War Trade Board announces in a new ruling (W. T. B. R. 500) that exporters in the United States, before filing application for export licenses must obtain from the prospective importers in Holland or Denmark advice by mail or cable that there has been issued by the Netherlands Overseas Trust, in the case of Holland, or by the Danish Chamber of Manufacturers, or Merchants' Guild of Copenhagen, in the case of Denmark, a certificate permitting the importation of the proposed consignment. The number of the certificate should be forwarded by the importer in Holland or Denmark to the American exporter, by cable or mail, either directly or through the Netherlands Legation, Washington, if for Holland, or the Danish Trade Commission, Washington, if for Denmark.

Henceforth the details of all the import certificates issued in Holland or Denmark will be transmitted by the Netherlands Legation or the Danish Trade Commission in the United States to the War Trade Board, Washington. All inquiries regarding import regulations and certificates should be addressed, for Holland, to Dr. W. H. de Beaufort, Counsellor of Legation, 1800 Connecticut avenue, N. W., Washington, D. C., or, for Denmark, to Mr. N. P. Arnstedt, Danish Trade Office, 1838 Connecticut avenue, N. W., Washington, D. C. Inquiries concerning Denmark can also be addressed to the Danish Consul General, 8-10 Bridge street, New York City.

PROCEDURE GOVERNING EXPORTS TO SWEDEN.

The United States War Trade Board has been advised that the Swedish rubber import association will accept, on behalf of the Swedish importer actually interested, consignments of rubber and rubber goods, when the shipment is covered by a certificate of the said association. All inquiries regarding the numerous Swedish import regulations and import certificates should be addressed either to A. R. Nordvall, Special Commissioner, 1325 18th street, N. W., Washington, D. C., or else to the Swedish Commission Trade Office, 60 East 42nd street, New York City. All Swedish import questions or difficulties relating thereto should be settled before filing applications with the United States War Trade Board.

PROCEDURE GOVERNING EXPORTS TO NORWAY.

In accordance with War Trade Board Ruling 497, exporters in the United States, before filing applications for export licenses, must obtain from the prospective importer in Norway advice by mail or cable that there has been issued by an appropriate import association, or by the Norwegian Finance Department, a certificate permitting the importation of the proposed consignment. This certificate must be either issued or confirmed subsequently to May 10, 1918. The number of this certificate must be forwarded by the importer in Norway to the American exporters, either directly or through the Norwegian Legation in Washington.

Hence the details of all the important certificates issued in Norway will be transmitted by the Norwegian Legation to the War Trade Board in Washington. All inquiries relating to regulations and certificates should be addressed to the Norwegian Legation, Commercial Department, Washington, D. C.

EXPORTATION TO RUSSIA.

In accordance with War Trade Board ruling No. 470, export licenses will henceforth be issued to approved consignees for the shipment of all non-conserved commodities to Siberia. It is no longer necessary to consign shipments to that country to the War Trade Board representative at Vladivostok.

Applications should be submitted on Form X, to which should be attached such supplemental information sheets as are required by the rules and regulations of the War Trade Board for the exportation of certain commodities. No other supplemental information sheets are required, and no import licenses need accompany the application.

SERVICE NOTES AND PERSONALS.

Corporal John D. La Fless, former factory cost clerk of The Fisk Rubber Co., Chicopee Falls, Massachusetts, has been cited for gallantry in action by Major-General Clarence R. Edwards, formerly commanding the 26th Division.

Ellis Harlow, son of Robert C. Harlow, the president of the Monaquot Rubber Works Co., South Braintree, Massachusetts, is particularly commended for bravery in Major Carroll Swan's new book, "My Company." This company, before the war, was of the well-known military organization, First Corps Cadets, and is now part of the famous 101st United States Engineers, still overseas.

Corporal Charles Marston, of the Loyal North Lancashire Regiment, has been awarded the Military Medal for gallant conduct and devotion to duty on the field. He was formerly employed by the Leyland and Birmingham Rubber Co., Leyland, England.

Auguste Choteau, vice-president of Bittel-Leftwich, Lindell Boulevard and Grand avenue, St. Louis, Missouri, a tire repair and service organization, is a lieutenant in France.

Lieutenant A. Klipstein, Jr., lately attached to the General Staff, having been discharged from the Army after 18 months' service, has taken up his former connections with A. Klipstein & Co., dealers in chemicals, 644-652 Greenwich street, New York.

Sergeant Edward Martin, son of A. W. Martin, plant manager of the Chelsea, Massachusetts, mill of Everlastik, Inc., has been cited for bravery by Major-General Clarence R. Edwards, formerly commanding the 26th, or Yankee Division. After all the stretcher-bearers attached to B Company, 102d Machine Gun Battalion, had been killed, Sergeant Martin volunteered to go out into No Man's Land and bring in the wounded. Although badly gassed he escaped otherwise unharmed. While convalescing in the hospital he volunteered for a blood transfusion which saved another soldier's life.

MARTYRS TO THE CAUSE OF LIBERTY.

Major F. A. Robinson, M. C. (with bar), 10th Tank Battalion, has been reported killed in action at Catillon, near Le Cateau, France. He was formerly in the electric light department of the India Rubber, Gutta Percha and Telegraph Works Co., Silvertown, England.

John J. Connolly, a private in the 327th Infantry was killed in action on October 12, 1918. He was employed at the Valley Street plant of the Revere Rubber Co. before enlisting.

Eugene F. Laforest, a member of E Company, 301st Engineers, died of bronchial pneumonia in France on December 12, 1918. Prior to entering the Army, he was employed by the Glendale Webbing Co.

Corporal Ernest Munroe, who is reported to have died in France of bronchial pneumonia, was a clerk with the National India Rubber Co., at the time of his enlistment in A Battery, 103rd Field Artillery, Rhode Island National Guard.

Application of Catalysis to Vulcanization.¹

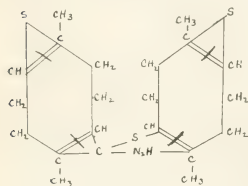
Specially Contributed by André Dubosc.

THE part played by sulphydric acid, produced by the action of resins during vulcanization, having been explained, let us see what can be the part played by sulphocyanic acid (CN_2HS) which is formed by the action of the proteins, of the glucosamine on the polymeric sulphur at the temperature of vulcanization.

The part it plays is very simple, it is that of a condenser which determines the polymerization and therefore the increase of resistance to breaking of the caoutchouc.

The sulphocyanic acid, $\text{C} \begin{smallmatrix} \text{---S---} \\ \text{---N}_2\text{H---} \end{smallmatrix}$, has four free valences.

It is therefore susceptible of saturating two double combinations belonging to two diert molecules of caoutchouc



CONDENSATION OF TWO MOLECULES.

molecules, the other double combinations of which have been saturated by colloidal sulphur.

We can therefore appreciate the justice of the observations of Lock and Bamber, who declared that the purer a gum is, the freer it is from proteins, the less (after vulcanization) is its resistance to rupture and, therefore, its polymerization.

Nature has therefore placed in the gum the elements necessary to its vulcanization and its polymerization, the resins which act as accelerators, the proteins which, in the presence of sulphur, form a condenser which determines the polymerization. Can we reproduce at will, synthetically, by the aid of simpler and more energetic products than the natural proteins and resins, these conditions which analysis has revealed to us? We cannot doubt it, for we know a certain number of nitrogenous substances, which, when heated with sulphur and carbon, are capable of producing abundantly sulphydric acid and sulphocyanic acid. These reactions of formation are produced, for example, in the distillation of coal which contains nitrogen, sulphur and carbon.

This does not mean that coal can act in caoutchouc during vulcanization, the same as proteins and resins act, for the simple reason that the reactions which we have described take place in the case of coal only at temperatures at which the gum would be entirely destroyed.

A substance cannot act as catalyzer during vulcanization, substituting itself for the useful substances which the natural gum contains, and producing effects which are similar, but more rapid, more complete and extensive, unless it rigorously fulfils certain conditions.

It must contain, in proper proportions, the quantities of carbon, hydrogen, oxygen and nitrogen necessary to produce the compounds reacting in the vulcanization, that is to say, the sulphydric, sulphurous and sulphocyanic acids. It must be dissociated at the temperature of vulcanization, 135 to 145 degrees C., so that, in the presence of sulphur, the hydrogen, oxygen, nitrogen or the cyanhydric acid necessary to the formation of the bodies named, may be set free. It must, therefore, meet both chemical and thermo-chemical requirements.

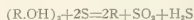
Further, the accessory products of the dissociation must have no bad effect on the caoutchouc during the curing, must not produce a disagreeable, persistent odor, and must cause no change in the final product.

Considering the varied results expected from these substances, we can already see that, from the point of view of classification, we must attribute two principal functions to them: (1) a function of acceleration which, in the presence of sulphur, at a proper temperature, will enable them to form sulphydric acid and sulphurous acid; (2) a function of vitalization which, in the presence of sulphur, at the temperature of vulcanization, enables them to form a condenser, the sulphocyanic acid, capable of producing the polymerization of the gum.

A complete catalyzer must be at one and the same time: (1) a sulphydric accelerator, (2) a sulphurous accelerator, (3) a sulphocyanic condenser.

Certain substances have two functions and three characteristics, others have one function and two characteristics, while others have two functions and two characteristics. Some have only the function of sulphydric accelerators; they are the compounds which in dissociating at 135 degrees C. furnish hydrogen or acetylene, substances which, in the presence of sulphur, produce in their turn sulphydric acid. This is the case of the resins and of a good many of the bases of the fat series. These catalyzers are of only very little interest.

Others have the function of sulphurous accelerators, such as the metallic oxides, as litharge, and the part they play is so well known as to render further explanation unnecessary. There are others which have the full accelerating function; they are sulphydric accelerators as well as sulphurous accelerators, such as the easily decomposable organic hydroxide compounds which, in the presence of sulphur, give sulphurous acid and sulphydric acid.



This is the case with certain alcohols and of most phenols. Certain members of the terpene series, such as camphor, behave in the same way and have two accelerating qualities. Other compounds possess only the vitalizing function and can produce only sulphocyanic acid, for example, cyanhydric acid and most of the cyanides; they yield their maximum effect only in the presence of other compounds, such as sulphide of carbon, which brings them a complement of carbonated elements.

Finally certain substances, which are complete catalyzers, have both functions and are at the same time sulphydric and sulphurous accelerators and vitalizers; such are the dinitrated derivatives of the amines as paranitroso dimethylaniline.

Besides these different catalyzers, we must mention a class perhaps even more interesting, that of the nitrogenous thiocompounds which can, besides acting as complete catalyzers, furnish in a colloidal state all the sulphur necessary for vulcanization. Such, for example, is thio-carbanilide.

It can be seen that, from the chemical point of view, the number of compounds that can facilitate, hasten and improve vulcanization, is considerable. Thermochemical reasons, based on the necessity of their dissociation, show that the most interesting ones are those whose dissociation constants are greater than 1×10^4 .

Those which meet this last requirement are still rather numerous and we have been able to test the results of about a hundred of them. Bearing in mind the divisions which we have

¹Continued from THE INDIA RUBBER WORLD, November 1, 1918, page 80.

been using, we shall study some types belonging in each category.

Among the sulphydric accelerators we may reckon the resin oils, crude petroleum, waxes and ozokerite, certain bitumens, sodium, calcium, potassium in the form of paraffinated powder, tannin, and turpentine. These substances permit the rapid formation of sulphydric acid, they diminish a little the length of time necessary for curing and, above all, they allow the work to be done at a lower temperature. They must be classified according to whether the vulcanization takes place with dry heat, under pressure, by steam, or with hot air with or without pressure. A substance which behaves admirably in one case acts badly in another. A group of sulphydric accelerators corresponds to every source of heat. This remark is general and applies not only to accelerators, but also to vitalizers, and to vitalizing accelerators.

Sulphurous accelerators are found chiefly among the metallic oxides and peroxides. We have long known the action of litharge and of light magnesia, of which the accelerating qualities have been empirically demonstrated.

Iron oxide has similar qualities but it seems that they attain their maximum effect only in the presence of brown factices.

The oxide of manganese, especially Weldon's earth, is a good accelerator, but must be used in very small quantities, as it reacts on the caoutchouc, oxidizes it and makes it easy to break.

Black copper oxide cannot be used, but the red oxide is an excellent accelerator; a one per cent mixture easily vulcanizes in 30 minutes; but, unfortunately, this oxide gives a green color to the gum.

Peroxide of zinc, peroxide of magnesium, peroxide of sodium, the alkaline carbonates and persulphates and the plumbates, in quantities of 0.5 to 0.2 per cent, are good sulphurous accelerators.

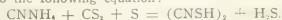
The same thing can be said of the mixture of chlorate of barium and vanadium salts, but all these substances must be used in very small quantities, with great precaution and, as far as possible, in the presence of sulphydric accelerators, such as resins or lanolin. Their use shortens the time necessary for vulcanization and allows lowering the temperature for the reaction.

The importance of these has greatly diminished since the discovery of vitalizing accelerators by using which both reactions can be obtained at the same time, without risking injury to the quality of the manufactured product.

Certain substances which are also classed among the accelerators can give both the sulphurous and the sulphydric reaction; they are those containing easily decomposable hydroxides. Certain alcohols, such as amyl alcohol, glycerine, terpineol, most of the phenols, particularly the diphenols, have these qualities. They accelerate vulcanization, but as their dissociation takes place only at a rather high temperature, no lowering of the heat during curing is possible.

We can include in this class also several alkaline oxides, such as sodium, potassium and barium hydrate, of which the accelerating action has long been known. The rapidity with which alkaline-reclaimed rubbers vulcanize is due to the presence of traces of sodium which acts to accelerate cure.

As a real vitalizer we can mention hardly anything but cyanhydric acid or the alkaline cyanides. The best is the cyanide of ammonium (CNNH_4), but it can be used only in the presence of sulphide of carbon. The reaction takes place according to the following equation:

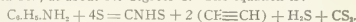


The substance behaves under these conditions as an accelerating sulphydric vitalizer.

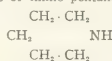
The addition of the vitalizer (mixture of cyanide of ammonium and of sulphide of carbon saturated with sulphur) is made when the mixture of the caoutchouc and charges is finished,

and the incorporation is insured by mixing on cold rolls to prevent too rapid evaporation of the sulphide of carbon. One can slacken this evaporation to a certain extent by adding tetrachloride of carbon to the sulphide, part for part. On account of their poisonous qualities, the use of cyanides cannot be recommended.

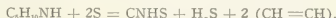
The sulphydric accelerating vitalizers are the most numerous and, practically, the easiest to use. Theoretically, every organic base, all amines and all imines can, under certain conditions, give the reaction of vitalization and of sulphydric acceleration. Such is the case of aniline, one of the first substances used as an accelerating vitalizer. The reaction is rather complex. In the presence of sulphur the benzene ring is broken up, forming a molecule of sulphocyanic acid, a molecule of sulphydric acid, two molecules of acetylene and one molecule of sulphide of carbon, at about 140 degrees C. The equation is:



In the class of the imines we can mention as giving very good results, piperidine or imino pentane:



The reaction again takes place by the breaking up of the ring, forming acetylene, sulphocyanic acid and sulphydric acid. The equation is:



A mixture composed of plantation crêpe, 60 parts; oxide of zinc, 33 parts; sulphur, 6 parts, and piperidine, 1 part, gives, under three atmospheres, a well-vulcanized product in 40 minutes and the following physical constants:

Breaking strength per square millimeter.....	1.905 grams
Elongation at break.....	5.9
Permanent elongation.....	1.08

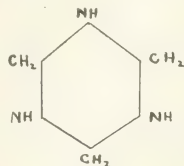
In order to obtain a perfect result it is necessary to add the piperidine to the sulphur before making the mixture. The crêpe and the oxide of zinc are uniformly mixed and the steam shut off from the rolls before the mixture of sulphur and of piperidine is added. The mixture must be allowed to rest 24 hours before being cured.

Paraphenylene diamine, aldehyde ammonia, sodium amide, benzylamine, naphthylene diamine, and all quaternary ammonium bases behave in the same way. Among these substances it is best to choose, as being the most energetic, those which can furnish most sulphydric acid and most sulphocyanic acid.

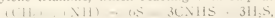
From this explanation it seems that the more atoms of nitrogen an aminated or imined compound substance has, the greater will be its energy as a vitalizer. This is not always true, for, besides the nitrogen, the atoms of carbon and of hydrogen necessary to form the active bodies, sulphydric acid and sulphocyanic acid, will often be lacking. One way of remedying this defect is to condense the amines with the aldehydes.

The type of this formation is the combination of formaldehyde with ammonia, which produces successively three accelerating vitalizers.

1. Trimethylene triamine.

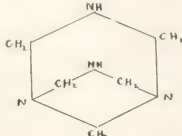


Trimethylene triamine, which reacting with sulphur, gives

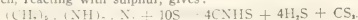


which is a perfect sulphydric accelerating vitalizer, since it leaves no residuary products.

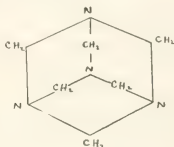
2. Pentamethylene tetramine,



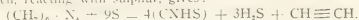
which, reacting with sulphur, gives:



3. Hexamethylene tetramine,



which, reacting with sulphur, gives:



Hexamethylene tetramine gives, in vulcanization, absolutely remarkable results from the point of view of time as well as of increase of breaking strength.

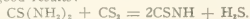
A mixture composed of plantation crêpe, 60 parts; oxide of zinc, 34 parts; sulphur, 5 parts, and hexamethylene tetramine, 1 part, under three atmospheres of pressure, gives, in 50 minutes, a perfectly vulcanized caoutchouc, of which the physical constants are as follows:

Breaking strength per square millimeter..... 3.170 grams
Elongation at break..... 7
Permanent elongation..... 1.095

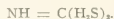
In the condensation of the amines and the imines with the aldehydes we condense an aldehyde of the fat series with an amine or imine of the aromatic series and vice versa.

The products of the addition of sulphide of carbon with certain bases and certain amines also give very good vitalizers. Among these we can mention the products of addition of the sulphide of carbon to dimethylamine with the $\beta\beta$ dimethyl, and methyl trimethylene imine with the different cobaltamines. These last substances are vitalizers of the first rank.

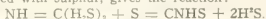
In this class of vitalizers we must place the sulphurated derivatives of urea, such as sulphourea, which, with sulphide of carbon, gives very good results:



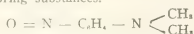
Dithiocarbonic acid,



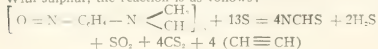
which, heated with sulphur, gives the reaction:



The products of dinitrification of the amines act as complete accelerating vitalizers, their oxygen together with the sulphur producing sulphurous acid. The type is the paranitroso dimethylaniline, an intermediary product well known in the manufacture of coloring substances.



With sulphur, the reaction is as follows:



Quinoline, oxyquinoline and their salts must be classed in the same group, as they act in the same way.

Most of the intrated compounds obtained in the immense series of coloring matters, such as Bismarck brown or paranitraniline, are capable of acting as accelerating vitalizers.

It can be seen, therefore, that the number of substances which can be used as catalyzers in the vulcanization of caoutchouc is considerable, but a judicious choice must be made, taking into consideration the conditions of temperature which cannot be exceeded.

A very wide choice of catalyzers is open to manufacturers, and among these different kinds they will be able to find the compounds they need, whatever may be the physical conditions of vulcanization, dry heat or open-steam heat to accelerate its speed, while considerably increasing the breaking strength of the caoutchouc.

NEW JERSEY CHEMICAL SOCIETY.

THE January meeting of the New Jersey Chemical Society was held January 13, in Newark, New Jersey. Rubber was the topic of the evening.

"Catalysts in the Manufacture of Rubber Goods (A Story of Accelerators)" was presented by George D. Kratz of Cuyahoga Falls, Ohio.

Mr. Kratz briefly reviewed the methods of obtaining plantation rubber from latex and the resulting loss in resins, sugars and proteins with impairment of the vulcanizing qualities of the rubber product.

"Some American Substitutes for Rubber," by Dr. Frederick Dannert, of Newark, New Jersey, covered the story of rubber manufacture with special reference to national self-containedness of the continental United States as regards crude rubber.

The meeting closed with remarks by H. O. Chute, of New York City, on the patent situation with respect to organic vulcanization accelerators.

THE CARBON BLACK SITUATION.

During the last half dozen years carbon black has become very important to the rubber trade, especially in the manufacture of automobile tires. Its annual production in the United States, derived entirely from natural gas, is placed at about 36,000,000 pounds. Formerly the larger portion of carbon black was used in the manufacture of printing ink; now, however, the rubber industry uses the larger part.

The United States Fuel Administration has recently appealed to the patriotism of the manufacturers of carbon black in the important West Virginia areas to help in the conservation of natural gas, the supply of which is growing scarcer. This appeal has been met in a liberal spirit of cooperation and with pecuniary sacrifices on the part of the manufacturers.

In this connection it should be noted that the largest producer of carbon black has already moved one large plant from West Virginia to Louisiana; has closed down a second, and will relocate the remainder outside the state. The gas thus saved will be distributed to various communities for fuel purposes. Certain of the West Virginia plants, however, will be run at full capacity till November first of this year.

The removal of the carbon black industry to sections remote from the manufacturing centers where it is used will operate to raise its price through increased freight on both the packing and the material.

REMOVAL OF AUTOMOBILE PROHIBITION IN STRAITS SETTLEMENTS.

The proclamation of May 16, 1917, which prohibited the importation into Straits Settlements and the Federated Malay States of automobiles, parts and accessories thereof, has been revoked, according to a cablegram of December 9 from the American Consul General at Singapore.

What the Rubber Chemists Are Doing.

INVESTIGATIONS OF THE VULCANIZATION PROCESS.¹ ACCELERATORS.

INSPECTION of the following tabulated results will show that some compounds, especially the basic, or such as are transformed at the vulcanizing temperature into bases, cause strong acceleration. Other compounds have no influence, while the acid compounds show distinctly a retarding influence.

INFLUENCE OF VARIOUS INORGANIC COMPOUNDS ON THE VELOCITY OF VULCANIZATION (VAN HEURN).

Extra addition of one per cent.	Vulcanization Coefficient.	
None	3.51	3.16
Magnesium oxide	6.90	6.80
Ammonium carbonate	5.85	5.20
Barium hydroxide	4.86	5.05
Sodium sulphide	4.86	4.93
Litharge	4.65	4.35
Sodium bicarbonate	4.51	4.66
Ammonium phosphate	3.86	4.29
Magnesium carbonate		3.98
Sodium bisulphite	3.39	3.91
Ammonium sulphate		3.34
Ammonium oxalate	3.12	2.86
Ammonium chloride	2.77	3.08
Zinc oxide	2.75	2.70
Ammonium borate	2.57	2.65
Ammonium nitrate	2.28	2.65
Potassium bisulphate	1.53	2.46

Of much greater influence is the action of organic accelerators as can be seen in the following table, which relates to vulcanizations according to the "standard method" in the oil bath.

INFLUENCE OF ORGANIC COMPOUNDS ON THE VELOCITY OF VULCANIZATION (VAN HEURN).

Extra addition of 1/2 of 1 per cent.	Vulcanization Coefficient.	
None	2.46	3.31
Accelerator	5.04	7.90
Vulcacite	7.00	7.69
Pipiline	7.00	6.95

Accelerene is the trade name of a product consisting of parinitroso dimethylaniline, which is often sold containing a great many impurities. Vulcacite seems to be a condensation product from acetaldehyde and ammonia, according to researches made at the Institute.

It is remarkable that this acceleration is not identical for all species of rubber and it seems as if the combining with sulphur is less accelerated for highly viscous kinds than for those of low viscosity. One would be likely to conclude this from Van Rossem's observations in the following table:

VULCANIZATION COEFFICIENTS FOR VARIOUS RUBBERS ON ADDING THE SAME QUANTITY OF ACCELERENE.

Number of sample	54T	26T	98T	163T
Viscosity number	30	42	73	102
Vulcanization coefficients with standard method (cured 1½ hours at 147° C. without addition)	2.3	3.1	4.3	4.7
Vulcanization coefficients at 1½ of 1%	1.9	1.9	1.5	2.1
to 3 minutes' cure at 147° C. with accelerene	3.1	3.0	2.55	2.3
to 1½ of 1%	3.6	3.6	3.2	2.9
to 1½ of 1%	4.2	4.4	3.1	3.3

The above data suggest important aspects for technical application. Before general conclusions can be drawn, further data will be required.

Another point worth notice, confirmed by the Institute, is that Kerbosch-Schadt rubber, prepared by evaporating the latex, possesses a high velocity of vulcanization, especially important in connection with the low viscosity. It is undoubted that this high velocity must be ascribed to serum compounds. It is further evident that there is no reason to give preference to natural accelerators above artificial ones, when one desires to make "stiff" goods, and only for those will the addition be of value.

PREVIOUS HEATING OF RAW RUBBER AND THE VULCANIZATION COEFFICIENT.

Experiments by Van Heurn demonstrated that one can increase the velocity of vulcanization considerably and thus improve the mechanical properties, by heating *Hevea* crêpe for four hours in a current of carbon dioxide at 130 degrees C. If the heating is continued beyond four hours the mechanical properties again decline, approaching normal. How far the change observed on heating in carbon dioxide is due to the influence of that gas and whether the same result may be obtained on heating in another indifferent gas, will be determined by future experiments.

PLASTICIZING AND THE MECHANICAL PROPERTIES OF VULCANIZED RUBBER.

Continued plasticizing causes the diminishing of the breaking load and the elongation at break. When plasticizing takes place during periods within those of ordinary practice such influence is not noticeable. The Institute has unpublished tests showing that on energetically plasticizing, but not to such an extent that the velocity of vulcanization diminishes, the course of the curve is not altered, but its end point is shifted. Possibly this fact may be attributable to air, imprisoned during plasticizing, which does not wholly escape during vulcanization. The course of the curve is practically independent of the degree of plasticizing.

TIME OF CURE AND THE MECHANICAL PROPERTIES.

The point investigated was whether a rubber with a low viscosity can yield on prolonged vulcanization as good a product as one with a high viscosity. The answer is affirmative.

BREAKING LOAD AND ELONGATION AT BREAK WITH INCREASING TIME OF VULCANIZATION.

Tests were made with blanket crêpe, viscosity 46; *Hevea* crêpe, viscosity 63; and *Hevea* crêpe, viscosity 70. The curing periods extended from one hour to three, varying by intervals of one-quarter hour, except that the 1½-hour interval was omitted. The results of the tests showed that a weaker product, by prolonged vulcanization, can yield as strong a product as a strong rubber, without the danger of overvulcanization. It is concluded that when the conditions of vulcanizing differ from the standard method only in time of cure, the vulcanization coefficient remains a measure of the mechanical properties.

INFLUENCE OF TEMPERATURE AND QUANTITY OF ADDED SULPHUR ON THE MECHANICAL PROPERTIES.

Completely normal stress-strain diagrams were obtained for rubbers vulcanized at 139.2 degrees C. (that is, nine degrees lower than the chosen "standard temperature"), by vulcanizing for two, three, four, and five hours, respectively. This is not the case when more or less sulphur than the standard quantity of 7½ parts is added to 92½ parts of rubber. For example, with 12½ parts of sulphur to 87½ parts of rubber a much greater stress is required for a certain elongation than is necessary for a "normally" vulcanized rubber. This condition is noticeable with ten of sulphur to 90 of rubber. With less than 7½ parts the reverse is observed. The influence of excess sulphur confirms the conclusion arrived at for catalysts, namely, that a greater rapidity of vulcanization causes, under similar circumstances, a stiffer rubber than would be expected from the vulcanization coefficient.

MISCELLANEOUS FACTORS AND THE MECHANICAL PROPERTIES OF VULCANIZED RUBBER.

No exceptions have been met with at the Institute in which the elongation curve did not practically confirm expectation of theory regarding the correlation of viscosity and vulcanization.

¹Continued from THE INDIA RUBBER WORLD, January 1, 1919, page 196

and of that existing between this coefficient and the situation of the curve of elongation.

The addition of chemically indifferent solid fillers has little or no influence on the velocity of vulcanization but does affect the mechanical properties. The elongation at break and breaking load decline and the rubber becomes stiffer as indicated by its elongation curve. The addition of soft fillers markedly reduces the breaking strength and elongation at break. This unfavorable effect was demonstrated by the presence of ten per cent of paraffine in a test compound.

THE ACTION OF ACCELERATORS ON THE MECHANICAL PROPERTIES OF VULCANIZED RUBBER.

Rubber vulcanized with powerful accelerators becomes "stiffer," and has less elongation at break than ought to be the case with the vulcanization attained. In other words it does not show a "normal" curve with relation to its vulcanization coefficient. In the case of vulcanization by the use of $\frac{1}{2}$ of one per cent of "accelerene" showing vulcanization coefficient 4.4, the curve occupied about the position of the normal one for a vulcanization coefficient of 7.

The end point of the curve is situated much higher than would be the case with a "normal" curve similarly located. Also the points of break for normal curves with high vulcanization coefficients are situated very far apart, while for rubbers vulcanized under accelerating conditions they all lie about equally high. From this it follows that rubber vulcanized with an accelerator can be stretched much farther without breaking than that vulcanized under ordinary conditions. With the former, brittleness occurs only with a much higher vulcanization coefficient and after reaching a greater degree of stiffness than with the latter. Therefore, whenever accelerators can be used a saving of steam will result and a product be obtained which will withstand greater elongation.

It is remarkable that rubbers with low viscosity are more accelerated in their vulcanization by similar quantities of accelerator than those of a high viscosity. For this reason their mechanical properties deviate more from the normal than those of highly viscous rubbers; consequently the action of accelerators is of higher importance for rubbers of low viscosity.

Addition of artificial accelerators under controllable conditions is preferable to intentionally leaving in the rubber natural catalysts, the nature and quantity of which are unknown. According to the opinion of the Institute, no danger exists of the oxidation of normally treated plantation rubber, packed and stored judiciously, even when stored for long periods.

Van Rossem hints at the possibility of greatly reducing the variability of plantation rubbers by careful adjustment of the addition of artificial accelerators with respect to the degree of viscosity of the rubber. Care is cautioned here because the question of proportion of accelerator desirable demands close and accurate study.

Regarding the possibility of unfavorable influence of accelerators in producing "after-vulcanization," it is said that such influence will probably be least for accelerators decomposable at the temperature of vulcanization, such as "accelerene" for example. The Institute advances the opinion that after-treatment of the vulcanized product with retarding catalysts, such as sulphur dioxide, can become a means of counteracting the harmful influence of after-vulcanization.

VULCANIZATION COEFFICIENT AS A MEASURE FOR THE MECHANICAL PROPERTIES.

With the standard vulcanization of first latex rubbers, the vulcanization coefficient gave an excellent indication of the mechanical properties. With a definite vulcanization coefficient known, the average course and the end point of the elongation curve could be calculated by using the Schopper machine.

Comparison of the elongation diagrams of vulcanizations dif-

fering from the standard method showed that the vulcanization coefficient offers a general indication of the probable course of the elongation curve, but that this is not the case with rubbers containing more than the usual quantities of artificial catalysts. Other factors influence the situation of the end point of the curve.

PRE, UNDER, OVER AND AFTER-VULCANIZATION.

In order to determine when a rubber may be pronounced well-vulcanized it is necessary to investigate the resulting properties produced from the inception of the process till it has advanced too far.

When rubber is heated only a short time with sulphur an alteration takes place which may be considered as the beginning of vulcanization. The resulting product may still be completely dissolved in the usual solvents for rubber. In this case the rubber is termed pre-vulcanized. Van Heurn has shown that this prevulcanization is noticeable at ordinary temperature, for after three months the viscosity of a mixture of 92½ parts of crepe and 7½ parts of sulphur appeared to be raised considerably more than could be explained from the recovery of the plasticized rubber. Prevulcanization was more marked for a mixture of sulphur, litharge, and magnesia. It is difficult to judge whether any sulphur is combined during this prevulcanizing; however, the impression is to that effect.

Prevulcanization merges into undervulcanization. The latter designation indicates that the product of vulcanization has become insoluble though still retaining plastic properties reminding one of raw rubber. It should be noticed that undervulcanization is often evident by porosity of the product, developed by steam bubbles in the rubber on blowing off the steam pressure.

Overvulcanization results in brittleness. Van Heurn points out that it is incorrect to think that where the breaking load attains a maximum, the best vulcanization exists. In practice overvulcanization will be assuredly prevented by not exceeding a vulcanization coefficient of 3.5 at the utmost.

After-vulcanization takes place in vulcanized rubber stored at ordinary temperature. The increase of combined sulphur is trifling, but at temperatures higher than normal, or when exposed to light, it becomes considerable. A well-vulcanized rubber in which only sulphur is present should possess a vulcanization coefficient of 2 to 4. It is not yet settled how far this result may be altered by the use of fillers and accelerators.

ALTERATION OF PROPERTIES DURING VULCANIZATION.

There exists a gradual change in the mechanical properties when passing from prevulcanization to overvulcanization. A similar continuity of change is observable on the transformation of overvulcanized rubber into ebonite. The quantity of combined sulphur also increases continuously coincident with a regular decline of the adhesiveness and solubility. Doubtless this continuity of changes also includes the other properties and applies to both hot and cold vulcanization.

THE NATURE OF MOTTILING OF VULCANIZED PARA RUBBER.

A paper by H. Runkel in "Gummi-Zeitung," 1916, page 144, is abstracted as follows in the "Journal of the Society of Chemical Industry," October 15, 1918, page 595A:

The sample examined was free from substitute and yielded only about 3 per cent ash. The lightest patches contained twice as much free sulphur as the darkest. The formation of the patches is explained as follows: After vulcanization the sulphur which has not combined chemically with the rubber passes, on cooling, into the amorphous or the rhombohedral form, except at the surface, where the octahedral crystals quickly separate. Sulphur wanders from the interior of the sample to the surface, and the sample "sulphurs up." At the same time, however, there occurs conversion of the less stable into the more stable form within the sample, the rubber acting as a solvent, and the sulphur wanders from certain parts of the solution and accumulates round other centers.

New Machines and Appliances.

THE MORRIS AUTOMATIC HEEL-TRIMMING MACHINE.

IN the accompanying illustration may be seen a novel heel-trimming machine that is practically automatic in operation. A rubber heel that has just been trimmed is about to fall into the delivery trough, while an untrimmed heel is shown in the position of being fed to the trimmer. When the heel is advanced to a certain point by the operator the machine takes hold of it and automatically completes the trimming operation.



THE MORRIS HEEL-TRIMMER.

Special cutters are provided on this machine, the upper one having a tapered cutting edge so that either tapered or straight-side heels may be trimmed in the same machine. Integral with the lower cutter is a small circular ridge, extending at right angles to the cutting edge, for the purpose of supporting the heel as the overflow is being removed. A special guard is fastened to the frame of the machine and extends outwardly under the upper cutter, effectively covering the cutting edge, protecting the heel and allowing only the overflow to be removed.

An adjustable guide that is attached to the table enables the operator to move the heels into the machine in rapid succession. An inclined trough conveys the trimmed heels by gravity to boxes provided for the purpose. (T. W. Morris, 3304 Warren avenue, Chicago, Ill.)

SEWING-MACHINE FOR BALLOON FABRIC.

Sewing-machines are necessary in the production of both airplanes and balloons, but there is so much more sewing to be done in the manufacture of even the smallest type of balloon that a special sewing machine was perfected in order that balloon production in the United States might be facilitated during the war.

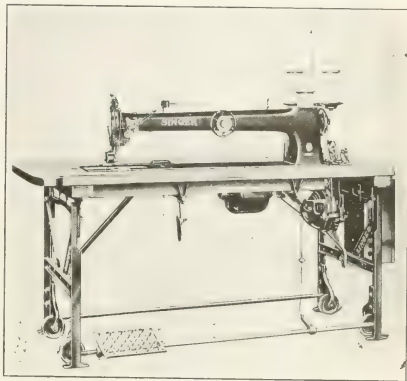
This machine is known as the Singer No. 113 w 110, front view of which is here shown. It makes two lines of lock-stitching simultaneously and the work is accomplished rapidly, each of the two needles being capable of a speed of up to 2,500 stitches per minute. When it is remembered that in the envelope of even some of the smaller balloons there are about 400 pieces of rubberized fabric to be sewed, the great advantage of a high-speed machine is apparent.

Before the seams are stitched the edges of the sections are cemented. The arm of this machine being 30 inches long, a large number of gores can be attached with cement and then sewed at one time. As the feed must be sufficiently powerful to handle long lengths of rubberized fabric, the machine is equipped with additional feeding mechanism including two feeding rolls which are located at the back of the twin needles. This auxiliary feed pulls the work while it is being stitched so that much of the burden of feeding heavy and bunched fabrics is taken from the regular feed, the entire feeding mechanism working in unison.

As already stated, this machine makes two lines of lock-stitching, there being one needle thread and one bobbin thread for each line of stitching, the lock of the threads being located within the thickness of the rubberized fabric. This true lock-stitch passes

the strictest government tests. When the covering strip of fabric is cemented over the stitched seams of the balloon, the upper and under threads of the lock-stitch lie so snugly under the strip that no air pockets are formed. When air pockets are formed a leakage of hydrogen gas from the balloon follows.

The illustration shows the machine equipped with individual electric motor which is the most satisfactory form of drive. The



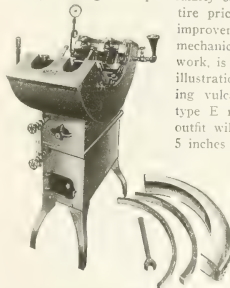
MACHINE FOR STITCHING BALLOONS

outfit, moreover, is portable, being mounted on casters to facilitate moving the equipment from place to place as desired. (The Singer Manufacturing Co., Elizabethport, New Jersey.)

A NEW RETREADING EQUIPMENT.

Retreading continues to be a popular expedient for prolonging tire mileage and particularly so at the present time when

tire prices are high. That marked improvement is being made in the mechanical equipment for doing this work, is shown in the accompanying illustration of a new type of retreading vulcanizer. This is known as type E retreading equipment. This outfit will retread tires from 2½ to 5 inches and consists of two ribbed



TIRE-RETREADING VULCANIZER.

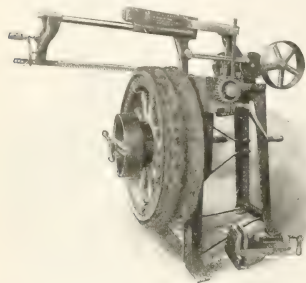
tread cavities, 2½ to 4-inch and 4½ to 5-inch, and a plain tread reducing shell for the 3½ to 4-inch cavity which will cure 2½ to 3-inch tires. It is made in 1/3 circle, can be heated by gas or gasoline and includes steam gage, water gage, safety valve and steel bands. This is a self-contained outfit. No boiler is required. (The Akron Rubber Mold & Machine Co., Akron, Ohio.)

POWER SAW FOR CUTTING SOLID TIRE BASES.

A novel application of the power hack-saw principle is shown by the accompanying illustration of a machine especially designed for cutting steel rims of solid tires. It is intended for use in service stations where worn-out tires are removed and new ones substituted on the wheel.

Solid truck tires are made on steel bases and forced on the wheel-rim by hydraulic pressure. In time, the wheel-rim and tire-base become firmly united and it is necessary to cut the steel base in order to remove the tire.

The wheel is clamped to a frame that is raised or lowered by worm-gearings operated by hand-power. The machine cuts on the draw stroke and the saw-frame is lifted on the return stroke by a compression oil lift-pump. A gage is provided to stop the



SOLID-TIRE-BASE CUTTING SAW.

cutting when the steel base has been severed. The saw-frame is adjustable for blades from 12 to 24 inches and will cut bases up to 16 inches wide. The machine may be driven by belt power or direct-connected motor. (W. Robertson Machine & Foundry Co., Buffalo, New York.)

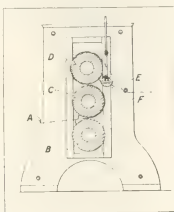
MACHINERY PATENTS.

APPLYING BALATA TO FABRIC WITHOUT SOLVENT.

FABRICS may be simultaneously coated with balata on both sides by this method, and without the use of solvents. The accompanying drawing is intended to illustrate only the coating device, which in this instance conveniently comprises the top roll of a three-roll calendar especially adapted for this purpose.

The balata stock is warmed up in the usual manner and banked above and below the fabric *A* as it passes between rolls *B* and *C*, that are excessively heated by steam. The impregnated fabric passes upwardly between the middle and upper, or cooling, roll *D*, and around the latter to the wind-up roller.

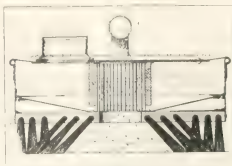
The cooling roll *D* is chambered for internal water cooling, while water jets sprayed from pipe *E*, arranged parallel with the roll, effectively cool the exterior surface of the cylinder. Trough *F* serves to carry off the water, and a rubber scraper attached to the inner edge of the trough removes the water from the roll and deflects it into the trough. (Lucien Abel François, Paris, France. United States patent No. 1,285,105.)



BALATA CALENDAR.

SOAPSTONE-BRUSH.

By the use of this hand device, powdered soapstone may be applied to the surface of rubber stock without creating clouds of dust in the operation.



IMPROVED SOAPSTONE-BRUSH.

It comprises a container body, the bottom of which supports the bristles of the brush, and the top of which is a flexible diaphragm. The soapstone is delivered to the brush portion of the device by pneumatic pressure which is set up within the device by the hand of the operator grasping the brush-handle.

Connected to the diaphragm are means for breaking up any lumps of soapstone caked within the container body, as the diaphragm top is reciprocated by the user. The soapstone is deposited in the center of the brush and, by the movements of the operator's arm, is distributed over the surface to be dusted. (Mark A. Replogle, assignor to The Goodyear Tire & Rubber Co., both of Akron, Ohio. United States patent No. 1,281,660.)

OTHER MACHINERY PATENTS.

THE UNITED STATES.

- NO. 1,283,462. Cutter attachment for calendars. C. W. Board, Akron, O.
 1,283,630. Vulcanizing press for curing concavo-convex blow-out patches. T. W. Bean and T. J. Hennessy, assignors to Firestone Tire & Rubber Co.—all of Akron, O.
 1,283,701. Mechanism for preparing tubes for splicing. C. H. Durkee, Springfield, Mass., assignor to The Goodyear Tire & Rubber Co., Akron, O.
 1,283,778. Tire mold. E. G. Hulse, Akron, O., assignor to Kelly-Springfield Tire Co., Jersey City, N. J.
 1,283,856. Machine for testing fabric. E. A. G. Meyer, assignor to Morgan & Wright—both of Detroit, Mich.
 1,283,947. Apparatus for treating materials. W. J. Steidle, Elmhurst Heights, N. Y., assignor to Rubber Regenerating Co., Naugatuck, Conn.
 1,283,948. Core-cleaning machine. W. C. Stevens, assignor to Firestone Tire & Rubber Co.—both of Akron, O.
 1,283,998. Core for tires and tire-carcases. C. W. Wattleworth, assignor to The Goodyear Tire & Rubber Co.—both of Akron, O.
 1,284,112. Repair vulcanizer. F. W. Kremer, Carlstadt, N. J.
 1,284,646. Machine for sewing rubber. J. R. Gaudrelet, Akron, O., assignor to The B. F. Goodrich Co., New York City.
 1,285,088. Repair vulcanizer. A. Fay, Louisville, Ky.
 1,285,321. Machine for manufacturing inner tubes. E. Nall, assignor to The Goodyear Tire & Rubber Co.—both of Akron, O.
 1,285,476. Calendar-roll grinder. W. A. Underwood, Worcester, and J. Zimmerman, Auburn—both in Mass.
 1,285,928. Chuck. J. L. Butler, Akron, O., assignor to The B. F. Goodrich Co., New York City.
 1,285,976. Machine for making tires. J. R. Gaudrelet, Akron, O., assignor to The B. F. Goodrich Co., New York City. (Original application divided.)
 1,286,263. Fabric-cutting machine. J. Ellis, assignor to G. & J. Tire Co.—both of Indianapolis, Ind.
 1,286,466. Tire-wrapping machine. C. P. Whittlesey, assignor to The Hartford Rubber Works Co.—both of Hartford, Conn.

THE DOMINION OF CANADA.

- 187,040. Calendar for tire-tread stock. The Canadian Consolidated Rubber Co., Limited, Montreal, Que., assignee of W. Kearns, Detroit, Mich., U. S. A.
 187,237. Tire-head trimming machine. The Canadian Consolidated Rubber Co., Limited, Montreal, Que., assignee of R. L. Tait, Hartford, Conn., U. S. A.

PROCESS PATENTS.

THE UNITED STATES.

- NO. 1,283,992. Treating old tires to produce new material. F. L. Harley, Folsom, Pa.

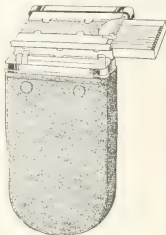
THE FRENCH REPUBLIC.

- 457,869. Process for producing artificial leather. E. Kalberer.
 458,036. Improvements in the vulcanization of rubber and analogous substances. The Dunlop Rubber Co.
 458,372. Improvements in the process of manufacturing colored rubber and the products made of this rubber. India Rubber Company.
 458,454. Process of making pneumatic tires. J. Ortiz Escofet.

New Goods and Specialties.

A COMBINATION TOBACCO-CONTAINER.

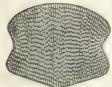
THE demand for a container for tobacco that will keep it away from moisture, and at the same time, one that will keep conveniently near the tobacco the papers, matches, etc., without which it is useless to the cigarette smoker, has resulted in "The Makings," of which an illustration is shown herewith. It consists of a pouch of waterproof rubberized khaki fabric attached to a nickel-plated top. This top, by an ingenious hinged arrangement, can be drawn away from the pouch sufficiently to get at the tobacco within. The top itself has a match-striker on one side and contains a tiny drawer or box in which matches and cigarette papers may be kept. When the container is to be put into the pocket, the match-box slides back into place and the top adjusts itself over the container-frame. The whole is neat, compact, and convenient, and is very good-looking. It is made from excellent materials and the idea is well executed. (The Scoban Co., Inc., New York City.)



"THE MAKINGS."

RUBBER IN THE MODERN HOSPITAL.

The application of rubber in the modern hospital is well-known, but not all of the uses to which it is put are familiar to the man in the street. Rubber tires and rubber-tired casters contribute much to the comfort of patients in a hospital and the accompanying illustrations show some developments along this line. The sectional view of the "Duckrub" tire illustrates how the canvas strips are inserted so that most of the wear is thrown on the edges. The other sectional view shows the round tread clincher type of rubber-tired wheel used on hospital beds, food cars, tray and dressing carriages, stretchers, etc. The tires are renewable. The caster below is of the swivel type. It is also rubber-tired and is used on hospital food cars, dressing carriages, stretchers, and different kinds of trucks, etc. The wheel illustrated in both sectional and perspective views is known as the solid-web rubber-



"DUCKRUB" TIRE.



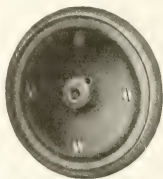
CLINCHER TYPE HOSPITAL WHEEL.



RUBBER-TIRED CASTER.



SOLID WEB RUBBER-TIRED WHEEL.



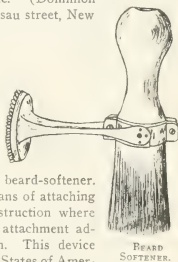
tired hospital wheel. It is used on hospital beds, operating tables, and other kinds of rolling equipment. These casters and wheels are made in the unfinished metal, black japan, or aluminum bronze finish to match the furniture. (Jarvis & Jarvis, Palmer, Mass.)

"RUSCO" RUBBER CORD TO RELIEVE AIRPLANE SHOCKS.

The demands of the airplane for dependable shock-absorbers have led to many expedients, and devices employing rubber are numerous. One of the newest is a cord made of strands of Pará rubber thread covered with cotton yarn. It is used to take up the shock of hard landings on airplanes. (The Russell Manufacturing Co., 349 Broadway, New York City.)

"DARCOLD" SHEET PACKING.

A new kind of sheet packing combines the advantages of the old-fashioned rubber kind and the long-wearing asbestos type. It resists heat, acids, brine, ammonia, gas, and alkali, and at the same time is strong and durable. (Dominion Asbestos and Rubber Corp., 154 Nassau street, New York City.)



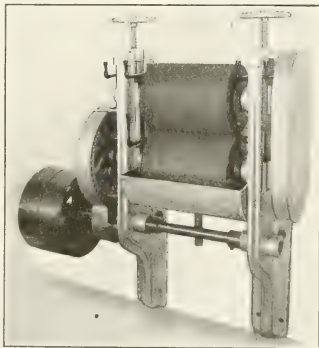
BEARD SOFTENER.

SHAVING-BRUSH ATTACHMENT.

The latest device to assist the man who shaves himself is an attachment for the shaving-brush which can be used with facility and satisfaction. It consists of a rubber disk with small projections that perform the function of a beard-softener. Spring arms and clamps provide means of attaching it to any brush, and a hinged construction where the arms join the clamp make the attachment adjustable to any convenient position. This device was recently patented in the United States of America. (James Smith, Jr., 66 Rose street, Phillipsburg, New Jersey.)

A WRINGER FOR MANY PURPOSES.

A wringer that combines the latest modern requirements of such a device as adapted for use in woolen and worsted mills, bleacheries, tanneries, and other similar industries, is pictured



THE "EXCELSIOR" WRINGER.

here. It is made with rolls in one diameter only, 10½ inches, and is driven by a tight-and-loose pulley. It can be attached to dyetubs when desired. The rolls are made of the best-quality rubber. (American Wringer Co., Woonsocket, R. I.)

THE EDITOR'S BOOK TABLE.

THE PREPARATION AND VULCANIZATION OF PLANTATION RUBBER. By B. J. Eaton, J. Grantham and F. W. Day. Kuala Lumpur, Federated Malay States, 1918. (Paper covers, 398 pages, illustrated. Price \$1 Straits Settlements. Equivalent to 56.7 cents United States currency.)

THIS volume embodies the results of the exhaustive series of scientific investigations conducted by the authors under Mr. L. Lewton-Brain, director of the department of Agriculture of the Federated Malay States. The researches are reported in a series of twenty-seven sections or chapters.

The results described under the section dealing with the scientific aspects of the problem have been published previously in the "Journal of the Society of Chemical Industry" and the "Agricultural Bulletin," Federated Malay States, but are rearranged in the present bulletin and a large number of experiments have been added. So far as they have been previously published these researches have been presented to the readers of THE INDIA RUBBER WORLD in the form of lengthy abstracts. It is of interest to rubber chemists to learn that the full report of the investigations is now available. The authors have appended to their report a reference list of 57 items covering the literature of crude rubber investigations from the plantation factory and chemical points of view.

INDIA RUBBER. BY H. P. STEVENS, M. A., Ph. D., F. I. C. Society of Chemical Industry, Central House, 47 Finsbury Square, London, E. C. 2.

This is a reprint from the "Reports of the Progress of Applied Chemistry," Volume II, 1917, of the Chapter entitled "India Rubber," etc., being an original review of published researches dealing mostly with the preparation of plantation rubber, under the following topics: "Statistics of the world's output of crude rubber for the past four years," "Preparation of Plantation Rubber," "Non-caoutchouc Constituents of Rubber Latex," "Viscosity of Rubber Solutions," "Theory of Vulcanization and the State of Cure," "Accelerators," "Vulcanization." Copious references are given to the original researches.

TIRE REPAIRING AND VULCANIZING. BY HENRY H. TUFFORD. William Hood Dunwoody Industrial Institute, Minneapolis, Minnesota. (Cloth, octavo, 98 pages, illustrated.)

When the training of United States Army men in tire-repair work was started by the Minneapolis Tire Dealers' Association and Dunwoody Institute, the need of a special handbook for the purpose was felt and the present volume was prepared to meet that need. It covers the various problems which come before the tire-repair man and is, therefore, a comprehensive, yet concise, treatise giving the best practice on the different repair jobs, describing the necessary tools and equipment, also devoting considerable space to accounting, costs and business methods. The chapters on retreads and cutting and building cord tires, particularly, are of very timely interest.

NEW TRADE PUBLICATIONS.

THE BELMONT PACKING & RUBBER CO., PHILADELPHIA, PENNSYLVANIA, is sending out "General Catalog No. 5." This was formerly the Clement Rostin Co., but the corporation has adopted "Belmont" as both brand and company name. The catalog gives an extensive list of rubber, asbestos, metal, flax and hemp packings, fully described and excellently illustrated both in entirety and in section. Sheet and wick packings and steam hose are also cataloged.

* * *

AMONG HOUSE-ORGANS OR FACTORY PUBLICATIONS "THE RUBBER Leaf" stands out prominently for typographical appearance and variety of contents. It is "published monthly by McGraw men for McGraw men," otherwise, the employees of the McGraw Tire & Rubber Co., East Palestine, Ohio. Well-edited, excellently illustrated, it certainly is a model publication of its kind and one

which commands perusal by all McGraw employees, men and women as well.

BULLETIN No. 333 of THE LINK-BELT CO., CHICAGO, ILLINOIS, is devoted to equipment for the handling and preparation of coal at the mine. Like all the publications of this company this 88-page pamphlet is crowded with excellent half-tones, well-drawn plans and diagrams, and succinct reading matter pertinent to the main subject. It must be of large value to coal miners, and is certainly of more than usual interest to the general reader.

* * *

SYMPTOMS OF POISONING BY AND ANTIDOTES FOR POISONOUS organic accelerators used in rubber work have been reprinted by permission of the American Chemical Society as a chart for use by factory superintendents. Copies can be obtained by addressing Dr. L. E. Weber, 729 Boylston street, Boston, Massachusetts. The data given will be found in THE INDIA RUBBER WORLD, issue of November 1, 1918.

HOLIDAY GREETINGS.

THE rubber and allied trades, with their usual generosity and cordiality, have sent THE INDIA RUBBER WORLD renewed expressions of good will and appreciation during the recent holidays. In return, this publication takes the opportunity to extend its thanks and to assure these friends in the trade that it cordially reciprocates their good wishes for progress and success in the new year which appears to offer such splendid opportunities in every line of business.

CALENDARS.

Elmer E. East, manager of Acme Belting Co., belting, packing, tires and tubes, mechanicals, and carriage cloth; also of United & Globe Rubber Manufacturing Cos., mechanical rubber goods, Chicago, Illinois, sends out an art calendar bearing a reproduction in color of C. D. Williams' painting, "The Angel of the Battlefields," representing the composite spirit of woman typified by a feminine figure in white, surrounded by soldiers of the Allied nations paying her tribute. The color scheme is blue and white.

General Electric Co., manufacturer of all kinds of electrical machinery and apparatus, Schenectady, New York, is represented by a large hanger calendar so constructed that one of its three sets of leaves may be thrown away every four months. Each page bears the current, the preceding, and the succeeding month. Above the calendar figures on each page is a representation of some particular machine or apparatus manufactured by the concern. The calendar combines yellow, red, and white as its color scheme.

The Wellman-Seaver-Morgan Co., engineer and manufacturer of rubber machinery, Akron, Ohio, distributes a hanger calendar so arranged that it is reversible after six months. Above the calendar on each page is an illustration of some one of its various specialties. The calendar is printed in pale yellow and black on white.

F. E. Myers & Bro., manufacturers of all kinds of pumps, for both hand and power operation, pump accessories, etc., Ashland, Ohio, duplicates their usual calendar featuring the styles of pumps they manufacture, but adds at the top very good reproductions of photographs of the proprietors, F. E. and P. A. Myers, who are the executive head, and the manager and producer of the concern, respectively.

The Pierce Co., manufacturer of "Vorite," a rubber substitute, East Rochester, New York, issues a large calendar with an especially clear date pad with black and white figures. Above is a sepia reproduction of the company's factory.

New Jersey Rubber Co., manufacturer of all kinds of reclaimed rubber, Lambertville, New Jersey, provides a pad for the "Handy" calendar stand.

H. T. West Co., Inc., dealing in oils, gums, and waxes, Bos-

ton, Massachusetts, sends out a panel calendar in two tones of green, decorated with a reproduction of the poem, "The Trees," by Christopher Morley in "Collier's Weekly," and illustrations featuring the poplar, the oak, and the pine, mentioned in the verses.

Edison Lamp Works of General Electric Co., manufacturer of "Mazda" electric lamps, etc., issues a long panel calendar bearing a reproduction of one of Maxfield Parrish's paintings for the company—"The Spirit of Night." The colors are blue, purple, yellow and orange, while the calendar is blue on gray.

The Pioneer Asphalt Co., Lawrenceville, Illinois, manufacturer of "M. R." hydrocarbon, contributes a calendar and memorandum pads for a desk calendar frame, accompanied by a card of greeting.

SOUVENIRS.

Morse Chain Co., Ithaca, New York, manufacturer of silent chains, sends out a leather-bound diary, featuring its products.

H. Muehlstein & Co., dealers in scrap rubber, New York City, is represented by a silk-lined leather bill-fold with the recipient's name engraved in gold on the outside and their own on the inside. Space is provided for an identification card under a celluloid shield, as well as the usual pocket for folded bills.

John Royle & Sons, manufacturers of rubber-working machinery, Paterson, New Jersey, distributes a gilt-stamped leather-bound diary, describing their products and provided with geographical maps.

Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pennsylvania, through its New York office, sends out a leather-bound diary featuring its products and containing maps.

JUDICIAL DECISIONS.

AERICAN CHICLE CO. *v.* UNITED STATES.—United States Court of Customs Appeals, November 26, 1918.

The merchandise in this case consists of chicle, which was assessed for duty under the provisions of paragraph 36 of the Tariff Act of 1913, which provides for chicle "refined or advanced in value by drying, straining, or any other process or treatment whatever beyond that essential to the proper packing," as the chicle in question had been shipped from Mexico to Canada, and there ground and dried before being imported to the United States. The protestants claim that it should have been assessed at the smaller duty of 15 cents a pound as "chicle, crude." The Board of General Appraisers sustained the assessment as made, and the importers appealed.

The United States Court of Customs Appeals affirmed the decision of the Board of General Appraisers. (Treasury Decisions, Volume 35, No. 25, December 19, 1918.)

HARDMAN TIRE & RUBBER CO. *vs.* STANDARD VULCANITE PEN CO.—Supreme Court, Appellate Division, First Department.

Appeal dismissed with \$10 costs. (New York Supplement, Volume 172, page 895.)

LIFE PRESERVER SUIT COMPANY *vs.* NATIONAL LIFE PRESERVER COMPANY.—Circuit Court of Appeals, Second Circuit, May 10th, 1918.

The National Life Preserver Company owned the Youngren patent on a life preserver suit which was intended to give both buoyancy and warmth to the wearer.

The Life Preserver Suit Company was organized by Keviczky who took over the exclusive sales of the National. Part of the contract was that six months after the contract date the Life Preserver people had the option of taking an exclusive license to manufacture the suits, for which they were to pay a royalty and furnish a suitable bond to guarantee payment thereof. At the expiration of the six months, notice was given that they desired to take the manufacturing license. Within the 10-day period, however, they requested an extension of thirty days because of difficulty in getting the necessary bond.

The directors and president of the National company refused to give the desired extension and no bond was ever executed.

The National people were about to make other arrangements inconsistent with that contract and the Life Preserver people brought action in the District Court to prevent them. That case was decided in the favor of the National people and was appealed. The decision was reversed and the case remanded. (Federal Reporter, Volume 252, page 139.)

CUSTOMS APPRAISER'S DECISIONS.

RAINCOATS—CHIEF VALUE.—Protest of F. B. Vandegrift & Co., New York City. The only question to be determined was whether the raincoats are in chief value of wool or in chief value of cotton. The goods were classified under paragraph 291 Act of 1913, as articles of wearing apparel in chief value of wool, at 35 per cent ad valorem, and are claimed to be dutiable under paragraph 256 as articles of wearing apparel in chief value of cotton, at 30 per cent ad valorem.

The controversy arises regarding the proper method to be used to determine the component material of chief value. On the evidence of the analyst, all the items were held dutiable at 30 per cent ad valorem, under paragraph 256, Act of 1913. Judgment was in favor of the protestants, sustaining the protests accordingly, and in favor of the Government overruling the protests as to the other merchandise and claims. (Treasury Decisions, Volume 35, No. 25, December 19, 1918.)

WEBBINGS.—Merchandise classified as webbings, composed in chief value of artificial silk and rubber, at 60 per cent ad valorem under paragraph 319, Tariff Act of 1913, is claimed dutiable as cotton fabrics with fast edges under paragraph 262, against which assessment Edwin Horrax (New York), protested. It was found that these webbings are made of cotton, artificial silk, and rubber, the cotton being of greater value than the separate or combined values of the artificial silk and rubber. They were held dutiable at 25 per cent under paragraph 262. (Treasury Decisions, Volume 36, No. 1, January 2, 1919.)

GUTTA SIAK.—A protest of the Rubber Association of America is sustained in a decision just rendered by the Board of United States General Appraisers, permitting the free entry of certain gutta siak. Duty was assessed at the rate of 15 per cent ad valorem under paragraph 385 of the Tariff Act of 1913. Judge Hay sustains a protest for free entry under paragraph 502.

ADJUDICATED PATENTS. THE UNITED STATES.

I. T. S. RUBBER COMPANY *vs.* PANTHER RUBBER MANUFACTURING COMPANY.—United States District Court, Massachusetts.

The Tufford patent, No. 1,177,833, for a mold for making rubber heels, claim 11 of which specified a mold chamber having one wall convex and the other concave, held invalid, and further held not infringed, if deemed limited to the particular structure shown and described. (Federal Reporter, Volume 253, page 63.)

NEW YORK AUTO SHOWS.

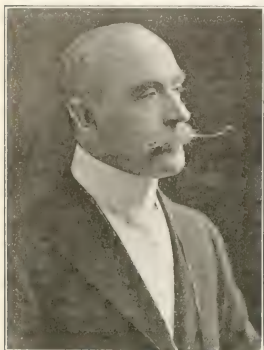
The passenger car exhibition will take place February 1-8, and the commercial car exhibition February 10-15, 1919. Both shows are under the auspices of the National Automobile Dealers' Association, and members of the Motor and Accessory Manufacturers' Association have decided to exhibit this season. So large are both sections of the show to be that no single building in New York is adequate to hold either. Madison Square Garden and the Sixty-ninth Regiment Armory together will house the passenger-car section during the first week, and the second week the commercial vehicle section, including motor trucks, delivery wagons, tractors, etc., will occupy both of the show buildings.

A big meeting of the National Automobile Dealers' Association, at which prominent men will speak, is scheduled for February 5, in the form of a noon-day luncheon.

The Obituary Record.

PIONEER IN THE PNEUMATIC TIRE INDUSTRY.

HARVEY DU CROS, through whose enterprise and business acumen Dunlop's invention of the pneumatic tire was developed, died at his residence, Dalkey, County Dublin, Ireland, on the twenty-first day of December, 1918, at the age of 72.



HARVEY DU CROS, J.P., M.P.

It is related that in 1888 when J. B. Dunlop a Belfast veterinary surgeon, devised two air-filled tires for his son's bicycle, Mr. du Cros, who, like his six sons, was an enthusiastic cyclist, saw the possibilities of the pneumatic tire and formed a company with a capital stock of £15,000 to exploit the invention. Though at first the "doughnut" tire was ridiculed it soon gained favor and displaced the "bone shakers," as the solid tire tricycles were afterwards called. The motor industry provided a much wider

scope for the pneumatic tire, and under the management of Mr. du Cros the name of the Dunlop tires became familiar on six continents.

Mr. du Cros was president of the Dunlop Pneumatic Tyre Co., Limited, an office which he held even after a shock rendered him physically disabled, though mentally as strong as ever, and since his retirement, a few years ago, he has always been available in an advisory capacity.

Mr. du Cros was born in Dublin, Ireland, in 1846, being descended from an old Huguenot family which settled in that country in 1702. He was a keen sportsman, and in his younger days excelled in boxing, rowing, gymnastics and cycling. He was a member of Parliament from 1906 to 1908.

Of his six sons, Sir Arthur du Cros has been for several years managing director of the Dunlop Rubber Co., Limited, Birmingham, England, and another son, Harvey du Cros, Junior, is joint managing director of The Austin Motor Co., Limited, Northfield, Birmingham, England.

A history of Mr. Harvey du Cros' connection with the Dunlop Pneumatic Tyre Co., Limited, was given at some length in THE INDIA RUBBER WORLD, December 1, 1909.

CHEMICAL EDITOR AND WRITER.

Raxley F. Weber, of the General Laboratories of the United States Rubber Co., New York City, died on November 9, 1918, after a lingering illness. Mr. Weber graduated from Cornell University in 1903, after which he taught chemistry for some years in the St. Louis high schools. His connection with the rubber industry commenced as research chemist with the Rubber Regenerating Co., Naugatuck, Connecticut, at the beginning of the year 1912.

His research work was thorough and resulted in some distinct advances in the art of reclaiming.

Failure in health led to his taking a six months' leave of absence in 1914, after which he joined the staff of the general laboratories of the United States Rubber Co., New York City, where his work was chiefly bibliographical. He was abstractor for the section on pigments, resins, varnishes and india rubber for the abstract journal of the American Chemical Society from January, 1913, until a separate section was formed for rubber and allied substances, of which he took charge as assistant editor in December, 1916.

At the United States Rubber Co.'s general laboratories he started the technical abstract bulletin that is circulated within the United States Rubber System and edited it with distinction, carrying on the work with a courage during his fight for health in the last part of his life that was an inspiration to his associates. He was peculiarly fitted for this sort of work and enjoyed its successful development under his hands.

Warm-hearted, whole-souled, and unselfish, he endeared himself to all of his associates and will be sorely missed by all who knew him.



RAXLEY F. WEBER.

THE PAINT INDUSTRY LOSES A LEADER.

Raymond Watson Evans, vice-president and general manager of The Eagle-Picher Lead Co., Chicago, Illinois, died suddenly in New York City on Thursday, the sixteenth day of January, 1919, following an attack of acute indigestion.



RAYMOND W. EVANS.

Mr. Evans was born at Covington, Kentucky, on April 8, 1871. After graduating from high school he started his business career in the dry goods business in Missouri. While in Colorado for his health, his attention was directed to the opportunities offered by the lead business and he accepted a position as salesman in the Far West territory for the Picher Lead Co. in 1894. One year later he became secretary and treasurer of the company. When the Eagle White Lead Co. was absorbed by the Picher company in 1916, Mr. Evans became vice-president and manager of sales.

Mr. Evans loved his business and his home, was a tireless worker and a modest, kind, universally liked man. To his ability the success of the company is largely due.

Mr. Evans leaves his widow, Alberta Wetzel Evans, a daughter, Eugenia, his mother, three sisters, and his brother, S. Marshall Evans, the latter being the second vice-president of the Eagle-Picher Lead Co.

News of the American Rubber Industry.

RUBBER INDUSTRY HAS FAVORABLE OUTLOOK.

COL. SAMUEL P. COLT, in a timely interview in the "New York Journal of Commerce," makes the following points:

The past year has been prosperous, the business of the United States Rubber Co. exceeding \$200,000,000; profits, without considering the Federal income tax, satisfactory; inventories, due to the sudden ending of the war, very large; goods in stock under the inflated prices for materials constitute a danger; outlook for 1919 excellent; wages to be maintained as far as possible until cost of living diminishes; no increase in cost of crude rubber anticipated; freights believed to continue high; shipping to return to normal before long; great increase in tire business looked for; tire prices to be reduced only when cost of cotton and other commodities is materially reduced.

NEW JERSEY ZINC CO. HAS SEVEN-STORY BUILDING.

The New Jersey Zinc Co. has moved into its new seven-story building at 160 Front street, New York City. The company manufactures lithopone and well-known brands of American and French process zinc oxides used by the rubber industry.



NEW JERSEY ZINC CO.'S NEW HOME.

In the construction of this modern edifice zinc materials were largely used. On entering the building, a carved horse's head, the company's trade-mark, may be seen over the doors. The entrance and vestibule doors are constructed of sheet zinc rolled on wood. Zinc-plated door checks, frames and window sashes are used. Flushings, gutters and all other outside work are made of rolled zinc, and the knobs and locks throughout are of zinc plate. The side walls of the elevators are of zinc construction, while their doors and bell plates are zinc-coated, giving a rich satin finish. The grilles for the registers were first stamped and then zinc-plated. The lighting and hardware fixtures are likewise zinc-plated. Paint, enamel and tints include zinc oxide and lithopone, the latter being contained in even the window shades.

THE S. A. E. WINTER MEETING.

The winter meeting of the Society of Automotive Engineers to be held at 29 West 39th street, New York City, February 4-6, 1919, will be devoted to the reconstruction problems facing the automotive industry. The annual banquet, to be held February 6, at the Hotel Astor, will take the form of a Victory dinner. About 2,000 members and guests are expected to attend. Prominent men have been invited to discuss the domestic and foreign future of the industry. The speakers at the professional sessions will be men in close touch with the automotive war program, who will now be permitted to give freely of the immense store of information collected by the Government. The report of the Standards Committee of the society will include important proposed standards.

DIVIDENDS.

The Corn Products Refining Co., New York City, has declared its quarterly dividend of $1\frac{3}{4}$ per cent. on preferred stock, payable January 15 on stock of record January 6, 1919.

The Eagle-Picher Lead Co., Chicago, Illinois, declared its regular quarterly dividend of $1\frac{1}{2}$ per cent on its preferred stock, payable January 15 on stock of record January 6, 1919.

The Empire Rubber & Tire Co., Trenton, New Jersey, has declared from its surplus earnings a quarterly dividend of $1\frac{3}{4}$ per cent on its preferred stock, payable January 10 on stock of record January 1, 1919.

The Goodyear Tire & Rubber Co., Akron, Ohio, declared its regular quarterly dividend of 2 per cent on its second preferred stock, payable February 1 to stock of record January 15, 1919.

The Hood Rubber Co., Watertown, Massachusetts, declared its regular quarterly dividend of $1\frac{3}{4}$ per cent on its preferred stock, payable February 1 to stock of record January 20, 1919.

The Lynn Rubber Manufacturing Co., Lynn, Massachusetts, paid a 7 per cent annual dividend on January 2, 1919.

The Manufactured Rubber Co., Philadelphia, Pennsylvania, declared a dividend of 3 per cent on its preferred stock, payable January 27, 1919. This concern paid 6 per cent annual dividends from 1908 to 1912, but discontinued them before the end of 1913.

The Na-Peer Tire Co., Akron, Ohio, declared a dividend of $1\frac{1}{2}$ per cent on its common stock and a semi-annual dividend of $3\frac{1}{2}$ per cent on its preferred stock, both of record December 31, 1918.

The New Jersey Zinc Co., New York City, has declared a quarterly dividend of 4 per cent, payable February 10 on stock of record January 31, 1919.

The Sterling Tire Corp., Rutherford, New Jersey, declared its regular quarterly dividends of 4 per cent per annum on its common stock and 7 per cent per annum on its preferred stock for the period of three months ended December 31, 1918, payable January 15, 1919.

The United States Rubber Co., New York City, has declared from its net profits a quarterly dividend of 2 per cent on its first preferred stock, payable January 28 on stock of record January 15, 1919.

The Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pennsylvania, has declared its regular quarterly dividend of $1\frac{3}{4}$ per cent on preferred and common stock, payable January 15 and 31, 1919, respectively, on stock of record December 31, 1918.

AMERICAN WEBBING MANUFACTURING EXPORT CORP.

A group of the largest manufacturers of webbing of all kinds in the United States, having an aggregate invested capital of nearly \$9,000,000, has organized the American Webbing Manufacturing Export Corp. to promote and handle foreign business. Some of the larger companies concerned are: Everlastik, Inc.; American Mills Co.; Ansonia O. & C. Co.; Conant, Houghton & Co.; George S. Colton Elastic Web Co., and the Sanford Narrow Fabric Co.

W. B. Spencer, general manager of Everlastik, Inc., is president of the new organization. Mr. Chambers, of the American Mills Co., is vice-president; F. L. Brigham, Conant, Houghton & Co., treasurer; C. R. Richmond, George S. Colton Elastic Web Co., secretary; Mr. Judd, foreign department of the Guarantee Trust Co. of New York, general manager; L. R. Brown, Everlastik, Inc., merchandise manager. The advisory committee consists of Charles Stretch, F. L. Brigham, A. F. Terrill and Mr. Sutcliffe.

JOHN W. THOMAS.

JOHN W. THOMAS, chairman of the solid tire division of the War Service Committee of the Rubber Industry of the U. S. A., is a native son of the Buckeye State, having been born in Tallmadge, Ohio, in 1880. He spent his boyhood days on a



J. W. THOMAS.

farm, entering Buchtel Academy at the age of 17, and completing his education at Buchtel College, from which he graduated in 1904 a degree of Ph. B. Shortly after graduation he entered the laboratory of The B. F. Goodrich Co., Akron, Ohio, where he spent three years in research and experimental work. In January, 1908, he joined the Akron, Ohio, organization of the Firestone Tire & Rubber Co. and installed its laboratory, where he served as chemist for two years, going thence to the manufacturing department, serving an apprenticeship in one tire manufacturing unit after another, and becoming manager of one of the departments. In 1911 he was appointed superintendent of the factory, a position he still holds, and in 1916 he was elected a member of the board of directors of this company. Mr. Thomas makes his home in Akron, is married and has four children, two boys and two girls. He is a member of the Congregational Church, of the Lone Star Fraternity, the Portage Country Club, Akron City Club, Rotary Club, Ohio Society of New York, Society of Automotive Engineers, Knights of Pythias, and the Akron Chamber of Commerce, of which last organization he is a director.

PERSONAL MENTION.

Prominent among the younger men identified with the rubber industry, and one who has won recognition by his versatile ability and invariable courteousness, is W. H. Dickerson. He was assistant to the secretary of The Rubber Association when, upon recommendation of the Committee on Rubber and Kindred Products, he went to the War Trade Board and the Bureau of Imports at Washington as trade expert in charge of details relating to the inspection and allocation of rubber and kindred products.



W. H. DICKERSON.

Having acquired in the service of the Government a successful record and a large acquaintance among leading rubber men, Mr. Dickerson will continue in the rubber business as a member of the office staff of Meyer & Brown, dealers in crude rubber, 347 Madison avenue, New York City.

Charles R. Sargent has been appointed general manager of Stresen-Reuter & Hancock, Inc., Chicago, Illinois, manufacturer, importer and exporter of colors, minerals, chemicals and oils. Mr. Sargent will take charge of the Chicago office, but will spend part of his time in Cleveland, where he has been branch manager.

Frederick W. Dunbar resigned on December 31, 1918, as American agent, attorney-in-fact, and manager of the New York City office of Aldens' Successors, Limited, London, England. He is succeeded by Thomas A. Maguire and Alvah H. Brown as joint agents and attorneys-in-fact.

R. A. Hoover, special representative of The Pioneer Asphalt Co., Lawrenceville, Illinois, was in New York City last month. L. P. MacNamara, of MacNamara & Wadbrook, Inc., New York City, has recently returned from a three weeks' trip to Hot Springs, Arizona, where he has extensive ranching interests.

E. E. Wadbrook, of the above company, has just returned from

Piedmont, North Carolina, where he participated in the golf tournament.

M. L. Heminway, whose efficient work as secretary of the War Service Committee of the Rubber Industry will be favorably remembered by the whole trade, has been appointed assistant manager of the Motor & Accessories Manufacturers' Association, 33 West 42d street, New York City.

Joseph P. Ripley, who has been in charge of the government sales of The Fisk Rubber Co., Chicopee Falls, Massachusetts, in Washington during the last year, as well as manager of the Baltimore district of the company, has been promoted to manager of the central district, with headquarters in Chicago. Mr. Ripley entered the employ of the Fisk company in January, 1909, as salesman in the western New York district. He was subsequently appointed manager of the Baltimore branch in 1910 and Baltimore district manager in 1915. The central district includes 20 direct branches of the Fisk company and comprises the states of Illinois and Indiana and parts of Wisconsin, Iowa and Kentucky.



J. P. RIPLEY.

Frederick B. Peterson, the former director of the Bureau of Imports, War Trade Board, has become associated with Charles T. Wilson Co., Inc., crude rubber dealers, New York City.

Elmer E. Bast has been appointed Chicago representative of the United & Globe Rubber Manufacturing Co., manufacturers of mechanical rubber goods, Trenton, New Jersey, with headquarters at 173 North La Salle street, Chicago, Illinois.

A. M. Whaley has been appointed Southern sales manager for The General Tire & Rubber Co., Akron, Ohio, with headquarters at Atlanta, Georgia.

Thomas L. Moore has been appointed Southwestern district manager for The General Tire & Rubber Co., Akron, Ohio, with headquarters at Dallas, Texas.

B. F. Wulff has been appointed general sales manager for the International India Rubber Corp., manufacturer of "South Bend" tires, Indiana. Mr. Wulff was formerly sales manager for the Century-Plainfield Tire Co., Plainfield, New Jersey, and was before that with the Kelly-Springfield Tire Co., in Chicago.

Claude Platt, recently central district manager of The Fisk Rubber Co., Chicopee Falls, Massachusetts, has been promoted to the position of special representative, with offices at the Chicago branch, 2508 Michigan Boulevard, Chicago, Illinois. Mr. Platt's new duties will take him among the manufacturers of the country, handling special and contract sales of both pneumatic and solid tires. Mr. Platt became identified with the Fisk company in 1905, when he was appointed Cleveland salesman, and later became manager of that branch. In 1909 he was appointed manager of the Chicago, and four years later manager of the central district.



CLAUDE PLATT.

J. T. Mahon, general manager of the Henderson Rubber Co., Baltimore, Maryland, spent 10 days in the early part of January in New York City.

Thomas A. Maguire has been appointed manager of the New York City office of Aldens' Successors, Limited, London, England, at 290 Broadway, succeeding Frederick W. Dunbar, resigned. Mr. Maguire's connection with the New York house covers a period of two years. He was formerly with Edward Maurer Co., Inc., New York City.

TRADE NOTES.

The McGraw Tire & Rubber Co. of New York, Inc., has been dissolved and The McGraw Tire & Rubber Co., East Palestine, Ohio, has been authorized to do business in the State of New York. Its representative is G. A. Schumacher, 55 33d street, Brooklyn, New York.

The Everwear Rubber Co., Milwaukee, Wisconsin, has bought the plant and equipment of the Pettley Rubber Manufacturing Co., and will continue the manufacture of high-grade mechanical rubber goods and molded specialties. The officers of the company are: Andrew Steele, president; F. C. Bunde, vice-president, and George W. Kliegel, secretary and treasurer. L. M. Bickett is in charge of the factory.

The Newman Tire & Rubber Co., Inc., dealer and jobber in automobile tires and tubes, has removed its general offices and warehouse to 244-246 West 54th street, New York City, to which address all communications should be sent. Both retail and wholesale business will be conducted and the several retail stores of the organization will obtain their merchandise from this central distributing point.

The Keystone Tire & Rubber Co., New York City, has entered into a contract with the Perfection Tire & Rubber Co., Fort Madison, Iowa, by which the latter concern will manufacture Keystone tires and ship them direct to the stores controlled by the Keystone company in the Middle West. The contract is on a cost-plus basis, similar to others made by the company in the past.

L. H. Butcher Company, Inc., New York City, has placed on the market as a compounding ingredient, "Diatomite," a natural silicious mineral of 1.61 specific gravity, which is offered as a substitute for carbonate of magnesite.

R. M. Loewenthal & Co., Inc., dealer in scrap rubber, announces the removal of its New York office to the factory, 343 Babcock street, Buffalo, New York, to which all communications should be addressed. Its new department devoted to the rebuilding of scrap automobile tires has developed to such an extent that the handling of scrap tires as scrap will be discontinued for the present.

O'Connor & Haupt, Inc., 71 West 3d street, New York City, was recently incorporated at \$2,000, as noted in our issue of January 1, 1919, and will manufacture pure gum hydraulic hat bags for manufacturers of men's, women's and children's hats, deal in unvulcanized rubber and tire repair materials and fabrics, and do all kinds of vulcanizing.

The True-Fit Waterproof Co., Inc., New York City, has been dissolved under the laws of the State.

The International Toy Co., Eau Claire, Wisconsin, has recently been incorporated under the laws of the State of Maine, as noted elsewhere, with a capital of \$100,000, to manufacture toys of all kinds. One of the specialties will be children's express wagons with Gillette auto truck tires. The officers are: L. D. Pangborn, president and general manager; Dr. S. P. Woodward, vice-president; A. P. Hansen, secretary and treasurer. Dr. Woodward is also president and treasurer of the Gillette Rubber Co., Eau Claire and New York City, while Mr. Pangborn, who is an experienced toy designer, has been chief draftsman and designer in the mechanical department of the Gillette Rubber Co. at Eau Claire.

The membership of the Society of Automotive Engineers increased by 717 during the year just past.

Orders placed by the government on December 7 for \$1,000,000 worth of tires included contracts for the United States Tire Co., Kelly-Springfield Tire Co., The Fisk Rubber Co., Firestone Tire and Rubber Co., and The Goodyear Tire & Rubber Co.

The Mulconroy Co., Pittsburgh, Pennsylvania, manufacturer of metallic hose, couplings, etc., removes January 1 from 528 Fourth avenue to the four-story warehouse at 112 Market street, Pittsburgh.

The Beacon Falls Rubber Shoe Co., Beacon Falls, Connecticut, is endeavoring to obtain additional workers to fill the large number of orders for civilian goods which were delayed during the execution of government work, now concluded.

The American Chiclé Co., 19 West 44th street, New York City, has contracted for the erection of a one-story brick building, 51 by 131 feet, on the north side of Borden avenue, Long Island City, to be used as a storage warehouse in connection with its present plant located there.

COMPOSER AND MANUFACTURER.

THE NAME of Seneca G. Lewis has been brought into nationwide prominence lately, as that of a composer who has turned over the royalties of several popular compositions to the "New York Sun" Tobacco Fund for smokes for United States soldiers overseas.



SENECA G. LEWIS.

Yet Mr. Lewis follows music, not as a profession, but as a pastime. He is a wide-awake, active business man, a natural organizer, a manager, and a rubber manufacturer.

He was born in Hartland, Michigan, and educated there and at Hillsdale College, Hillsdale, in the same state, graduating in 1889, after which he spent two years on a ranch in the "Wild West." On his return, he entered the employ of the Fletcher Hardware Co., Detroit, Michigan, and later became manager

of the sporting goods department of that organization.

In 1900, at Detroit, in company with W. E. Metzger, he promoted and managed the first automobile show held in the United States, and continued in management of this enterprise until he accepted the position of sales manager of the Winchester Repeating Arms Co. in 1904.

While in Detroit he found time to cultivate his musical talent, and for a time it seemed probable that he would adopt this as his life work. But his final decision was for a business career. In 1910, a personal friend, Charles M. DuPuy, induced him to undertake the reorganization of the Pennsylvania Rubber Co., Jeannette, Pennsylvania, in which the DuPuy family was financially interested. Accomplishing this, he acted as general manager, a position affording him the opportunity of carrying out plans he had formulated long before, and so successful were these that he brought the company to its present prominence. In 1918 he was elected vice-president as well as general manager.

For several years he transcribed hardly a melody, but the entrance of the United States into the war inspired him to produce a number of patriotic compositions, a song, a march, and a one-step, and to dedicate the royalties to the benefit of the boys in khaki. It is his hope that the royalties may ultimately reach \$25,000, nearly half of that amount having already been contributed.

Mr. Lewis is a member of several Pittsburgh clubs and is also president of the Jeannette War Service Union, an association formed to assist, in any way which may be necessary, soldiers returning from military to civil life.

NEW INCORPORATIONS.

Ames Tire & Rubber Co., Inc., January 4, 1919 (New York), \$4,000. C. A. Weldon, 591 7th street, Brooklyn, New York; H. Bernheim, 35 Nassau street, A. Hirsch, 847 Hunsontown avenue—both of New York City. To manufacture and deal in tires.

Capital Tire & Rubber Co., Inc., January 13, 1919 (New York), \$2,000. C. A. Weldon, H. S. Hartstein, A. Hirsch—all of 35 Nassau street, New York City. To manufacture tires and rubber goods.

Carpenter Tire & Rubber Co., Inc., January 19, 1919 (New York), \$20,000. H. C. Carpenter, 30 Bay View Road, Rockville Centre, L. F. Rudiger, 59 East 60th street, Far Rockaway, Long Island, M. F. Hennessy, 165 Prospect East, West, Brooklyn—all in New York. To manufacture tires and rubber goods.

Chadbourne & Moore, Inc., December 31, 1918 (Massachusetts), \$400,000. J. H. Chadbourne, 179 Lincoln street, Boston; W. B. Moore, 19 Summit street, Lynn, Mass. To manufacture tires and rubber goods.

Continental Rubber Co., Inc., December 31, 1918 (Massachusetts), \$100,000. H. J. Cohrs, E. S. Cohrs—both of 60 Smith street, Jamaica, I. Gilbert, 175 Schenectady avenue, Brooklyn—all in New York. To manufacture inner products, for auto, and motorcycle tires.

Continental Drug Co., February 23, 1918 (Delaware), authorized capital stock \$1,500,000. C. W. Rumliger, M. M. Clancy, E. A. Armstrong—all of Wilmington, Delaware. Principal office with the Corporation Trust Co. of America, DuPont Building, Wilmington, Delaware. To manufacture import, export, and generally deal in rubber goods, etc., and acquire buildings, machinery, and equipment with the purpose.

Continental Drug Corp. (Delaware), authorized December 4, 1918 (Illinois), \$245,000. R. C. Luly, agent, 825 Washington street, Alton, Illinois. To deal in rubber goods.

Eastern Waterproof Co., Inc., January 21, 1919 (New York), \$1,000. M. Berman, 812 Suburban place, L. Berman, 910 Union avenue, M. Hensley, 414 East 10th street—all of New York City. To manufacture raincoats, etc.

Elmura Tire Sales Station, Inc., January 16, 1919 (New York), \$2,000. C. A. Weldon, 591 7th street, Brooklyn, New York; H. Bernheim, 35 Nassau street, New York City. To sell tires.

G. R. S. Tire Co., Inc., January 2, 1919 (New York), \$600. I. Gilbert, 175 Schenectady avenue, C. Klotzler, 121 Dresden street, Principal office, Broadway Place—all of Brooklyn, New York. To manufacture auto tires.

Graham Tire & Rubber Co., January 10, 1919 (Delaware), \$50,000. F. H. L., and L. D. Graham—both of 2630 First street, New York City. To manufacture tires and rubber goods.

H. L. L., and L. D. Graham—both of 2630 First street, New York City. To manufacture tires and rubber goods.

International Tire & Rubber Co., Inc., December 31, 1918 (New York), \$150,000. A. L. Helwitz, 1051 East 23rd street, R. C. Klotzler, 121 Dresden street, J. Aronson, 967 East 10th street—all of Brooklyn, New York. To manufacture rubber goods.

International Toy Co., December 16, 1918 (Maine), \$100,000. D. F. Drew, C. W. Hamilton, A. B. Farnham—all of Portland, Maine. Principal office, Portland, Maine. To manufacture all kinds of toys and express wagons with Gillette safety auto truck tires.

Lion Tire & Rubber Co., Inc., December 30, 1918 (New York), \$1,500. H. S. Hartstein, 350 Havemeyer street, C. A. Weldon, 591 7th street; M. Kitzky, 723 Monroe street—all of Brooklyn, New York.

Lodi Rubber Works, Inc., January 3, 1919 (New Jersey), \$50,000. A. Lodi, 364 Riverside Place, Jersey City, New Jersey; M. Calvert, 60 South Maple avenue, Ridgewood; G. W. Parigot, Allendale avenue, Allendale—both of New Jersey. Principal office, Main street, Borough of Lodi, New Jersey. To manufacture and deal in rubber goods.

MacNaughton Tire Co., Inc., January 6, 1919 (Delaware), \$10,000. M. Franklin, L. H. Petrol, C. L. Petrol—all of 1919 Pennsylvania avenue, Delaware agents, Corporation Trust Co. of Delaware, Dover, Delaware. To manufacture and deal in automobile tires and all accessories.

Midco Tire Co., Inc., January 23, 1919 (New York), \$25,000. C. S., and S. Huntley, both of 260 Valentine Lane, Yonkers, New York; O. E. Drury, 1135 Commonwealth avenue, Boston, Massachusetts. To manufacture tires and rubber goods.

Newburgh Tire & Rubber Co., Inc., December 23, 1918 (New York), \$1,500. H. S. Hartstein, 350 Havemeyer street, C. A. Weldon, 591 7th street, M. Kitzky, 723 Monroe street—all of Brooklyn, New York. To manufacture tires.

New Hide Manufacturing Co., January 4, 1919 (Delaware), \$100,000. C. L. Rumliger, M. M. Clancy, O. B. Drew—all of Wilmington, Delaware. Principal office, the Corporation Trust Co. of America, Du Pont Building, Wilmington, Delaware. To manufacture, and deal in leather, imitation leather, belting, etc.

New Jersey Tire & Rubber Co., Inc., December 30, 1918 (New York), \$1,000. H. S. Hartstein, 350 Havemeyer street; C. A. Weldon, 591 7th street; M. Kitzky, 723 Monroe street—all of Brooklyn, New York.

New Jersey Tire & Rubber Co., Inc., December 30, 1918 (New Jersey), \$150,000. M. C. Overman, 250 West 54th street, C. A. Tausig, 220 Broadway, W. B. Lowther, 43 Cedar street—all of New York City. Principal office, Hill street, Jersey City, New Jersey.

Panco Rubber Co., The, January 4, 1919 (Massachusetts), \$100,000. F. Callaghan, 200 West 10th street, New York City; W. B. Moore, 19 Summit street, Rockville Centre, Forest Hills; M. Marcus, 77 Homestead street, Roxbury—all in Massachusetts. Principal office, Chelsea, Massachusetts. To manufacture, buy, sell and deal in rubber, rubber goods and rubber substitutes.

Perfection Tire Unkep, Inc., January 15, 1919 (New York), \$100,000. M. E. Andre, 3799 Lake avenue; I. W. Phillips, 1919 Clifford avenue; M. Miller, 42 Sidney street—all of Rochester, New York. To manufacture, deal and lease tires.

Protective Raincoat Co., Inc., January 3, 1919 (New York), \$5,000. Abraham and Eva LeBlang, both of 170 West 14th street, New York City. To deal in rubberized apparel, etc.

Raisley Tire & Rubber Co., Inc., January 4, 1919 (New York), \$2,000. C. A. Weldon, 591 7th street, Brooklyn, New York; S. Bernheim, 35 Nassau street; A. Hirsch, 847 Hunsontown avenue—both of New York City. To manufacture and deal in tires.

Retrograde Corp., January 16, 1919 (New York), \$52,500. M. W. McConnell, 239 West 52nd street, New York City, E. C. and E. M. Brannan, both of Chicago, Illinois. To repair tires.

Rubber Tire Corp., January 10, 1919 (New Jersey), \$40,000. F. R. Hansell, I. C. Clow, J. A. MacPeak—all of 417-419 Market street, Camden, New Jersey. Principal office, 417-419 Market street, Camden, New Jersey. To manufacture, sell, and generally deal in steel-studded leather treads for automobile tires of all kinds, etc.

Salem Setting Tire Manufacturing Co., They, December 1, 1918 (Wisconsin), \$100,000. M. C. Wells, 310 Washington street, Milwaukee; L. S. Brown, 106 Wisconsin street, M. Rasmussen, 444 Ontario, Milwaukee; J. A. Wisconsin, 214 Wisconsin street, C. A. Weldon, 591 7th street. To manufacture automobile and truck tires.

Saxet Tire & Rubber Co., Inc., December 23, 1918 (New York), \$2,000. H. S. Hartstein, 350 Havemeyer street; C. A. Weldon, 591 7th street; M. Kitzky, 723 Monroe street—all of Brooklyn, New York. To manufacture tires.

Schenectady Tire & Rubber Co., Inc., January 20, 1919 (New York), \$3,000. C. A. Weldon, H. S. Hartstein, A. Hirsch—all of 35 Nassau street, New York City. To manufacture tires.

Siegel Shoe Co., December 31, 1918 (New Jersey), \$100,000. D. R. Siegel, M. Grossman, S. Hausman—all of Newark, New Jersey. Principal office, 786 Broad street, Newark, New Jersey. To purchase and sell boots, rubbers, etc.

St. Louis Motor Co., Inc., December 23, 1918 (New York), H. W. Mateer, 215 Manhattan avenue; E. G. Turner, 214 West 110th street—both of New York City; J. F. Stanley, 530 54th street, Brooklyn, New York. To manufacture tires and rubber goods.

Tire Service & Supply Co., Inc., December 31, 1918 (New Jersey), \$100,000. F. W. Windmiller, R. C. Gluck, H. Feder—all of 863 Bergen avenue, Jersey City, New Jersey. Principal office, 863 Bergen avenue, Jersey City, New Jersey. To manufacture and sell tires, carriages and vehicles of every description.

Tough Rubber Co., Inc., December 5, 1918 (Massachusetts), \$25,000. A. S. Sausch, 12 Prospect street, J. W. and E. H. Myers, both of 282 Cohasset street—all of Taunton, Massachusetts. Principal office, 38 Tremont street, Taunton, Massachusetts. To buy, sell, manufacture, and deal in rubber goods and equipment.

Union Standard Rubber Co., January 4, 1919 (Delaware), \$3,000,000. S. S. Adams, Jr., G. J. Gray, R. A. Giacomini—all of Wilmington, Delaware. To manufacture and deal in rubber goods.

United States Rubber Co., Inc., January 18, 1919 (New York), \$3,000. E. Levitas, 6215 20th avenue, Brooklyn, New York; R. Ikwitz, 29 Lewis street, M. Ikwitz, 95 Cannon street—both of New York City. To manufacture and sell tires and rubber goods.

Universal Tire Repair Co., Inc., January 18, 1919 (New York), \$5,000. S. A. Davison, Rockville Centre; E. G. Darmstadt, Hewlett; E. E. Blakeley, Lynbrook—all of New York City. To repair tires.

Victory Tire & Rubber Co., December 18, 1918 (New York), \$300,000. A. W. Britton, G. V. Reilly, L. H. Gunther—all of 65 Cedar street, New York City. Principal office, 15 Exchange place, Jersey City, New Jersey. To purchase, sell, and deal in all kinds of rubber and rubber goods.

Watertown Tire & Rubber Co., Inc., January 10, 1919 (New York), \$50,000. C. A. Weldon, 591 7th street, Brooklyn, New York; S. Bernheim, 35 Nassau street; A. Hirsch, 847 Hunsontown avenue—all of New York City. To manufacture tires and rubber goods.

Wilmington Tire & Rubber Co., Inc., January 10, 1919 (New York), \$1,000. C. A. Weldon, 591 7th street, Brooklyn, New York; S. Bernheim, 35 Nassau street; A. Hirsch, 847 Hunsontown avenue—all of New York City. To manufacture tires and rubber goods.

THE MID-WEST RUBBER MANUFACTURERS' ASSOCIATION.

A number of rubber manufacturers of the Central Western States met on January 7, 1919, at Chicago and formed the Mid-West Rubber Manufacturers' Association. John W. Maguire, The Brunswick-Balke-Collender Co., was elected president. John T. Christie, Hawkeye Rubber Co., Des Moines, Iowa, was made vice-president, and Preston E. Roberts, Perfection Tire & Rubber Co., Fort Madison, Iowa, was chosen as secretary. H. V. Conradt, Kokomo Rubber Co., Kokomo, Indiana, is the treasurer.

The directors are: Marshall D. Wilbur, Palmer Tire & Rubber Co., St. Joseph, Missouri; M. P. Nicol, Ten Broeck Tire Co., Louisville, Kentucky; and C. Wright, Racine Auto Tire Co., Racine, Wisconsin.

Representatives of the following companies now constitute the membership: Johnstone Tire & Rubber Co., Laporte, Ind.; Century Rubber Works, Inland Rubber Co., Dryden Rubber Co., Featheredge Rubber Co., and The Brunswick-Balke-Collender Co., Chicago; Twin Tube & Rubber Co., Chicago Heights; Boone Tire & Rubber Co., Sycamore, Illinois; Wilson Tire & Rubber Co., Springfield, Illinois; Double Fabric Tire Co., Auburn, Indiana; Lion Tire & Rubber Corp., Lafayette, Indiana; Iowa City Tire & Rubber Co., Iowa City, Iowa; Hawkeye Tire & Rubber Co., Des Moines, Iowa; Perfection Tire & Rubber Co., Fort Madison, Iowa; Sioux City Tire & Manufacturing Co., Sioux City, Iowa; Racine Auto Tire Co., Racine, Wis.; consins; Indiana Rubber & Insulated Wire Co., Jonesboro, Indiana; Kokomo Rubber Co., Kokomo, Indiana; Federal Rubber Manufacturing Co., Cudahy, Wisconsin; Ten Broeck Tire & Rubber Co., Louisville, Kentucky; Curtis Tire & Rubber Co., Muskegon, Michigan; Cupples Co., St. Louis, Missouri; Gillette Rubber Co., Eau Claire, Wisconsin; Mid-Continent Tire & Manufacturing Co., Wichita, Kansas; Kansas City Tire & Tube Co., Kansas City, Missouri; Palmer Tire & Rubber Co., St. Joseph, Missouri; Burdick Tire & Rubber Co., Noblesville, Indiana.

THE RUBBER TRADE IN OHIO.

By Our Special Correspondent.

THE Firestone Tire & Rubber Co., Akron, reports increasing business in its footwear sales. This branch of the business was started only a year and a half ago, but has grown rapidly. Fourteen new salesmen have recently been added to the force, which is now four times the original number. A convention for salesmen was held during the first week in January, the principal feature being a training school dealing with selling principles and policies. The total sales in the footwear department during 1918 amounted to \$2,216,000, as compared with \$715,000 in 1917. The present output of light footwear is 2,500 pairs daily, and several new lines have been added.

The Firestone Tire & Rubber Co., Akron, has paid to its employees since September 12, 1918, when it inaugurated its plan for group insurance, \$15,000. The amounts going to families and dependents of deceased employees ranged from \$500 to \$1,000, and included 26 cases where the deceased had been in the employ of the company longer than 30 days, while one had been employed more than eight years.

The Firestone Steel Products Co., Akron, manufacturer of solid and pneumatic tire rims and S. A. E. bands, has added three new representatives to its force: A. D. Droeger, manufacturers' representative; C. W. Flick, Eastern representative; J. C. Bailey, Western representative.

A band of 50 pieces has been organized among the employees of The B. F. Goodrich Co., Akron, under the direction of Clark Miller, former leader of the Eighth Regiment Ohio National Guards Band. The officers are: Edward Connelly, president; William Overholser, vice-president; and L. F. Riley, secretary.

The 25 per cent bonus recently paid employees of The B. F. Goodrich Co., Akron, throughout the country, amounted to \$2,000,000.

The Wellman-Seaver-Morgan Co., Cleveland, has opened a San Francisco office at 415-417 Rialto building, in charge of Norman S. Ross. The territory covered will include California, Nevada west of the 115th meridian, Lower California, and the counties of Josephine, Jackson and Klamath, Oregon.

Horace N. Trumbull has been appointed advertising manager of the Wellman-Seaver-Morgan Co., Cleveland. Mr. Trumbull has recently been discharged from the Engineers Officers' Training School at Camp A. A. Humphreys, Virginia.

The stockholders of The General Tire & Rubber Co., Akron, have approved action of the board of directors with reference to increasing the capital stock of the company from \$1,000,000 to \$2,500,000. The additional capitalization is for new buildings and machinery.

The following directors were elected: M. O'Neill, W. O'Neill, T. F. O'Neill, W. E. Fouse, G. F. Burkhardt, W. L. Beckley and J. A. Diebolt. The officers were reelected as follows: M. O'Neill, president; W. O'Neill, vice-president; Charles Herberich, treasurer, and W. E. Fouse, secretary.

The L. H. Butcher Co., Inc., dealers in colors, chemicals, minerals and industrial ores, 100 William street, New York City, have opened an office in the People's Savings and Trust building, Akron, in charge of George H. Jacobs, where a stock of standard materials will be carried.

G. P. Blackiston has been appointed head of the cooperative and advertising department of The American Rubber & Tire Co., Akron. He has been advertising manager of the Packard Electric Co., Central Steel Co., etc., and is an enthusiastic automobilist.

The Mohawk Rubber Co., Akron, recently recognized the efficiency of its salaried employees throughout its branches as well as in the home office, by a 10 per cent bonus.

The Goodyear Tire & Rubber Co., Akron, recently announced that the company will not follow the plan of many concerns and give bonuses, but will recognize deserving employees by a salary increase.

George Spalding in charge of the solid tire department of the Goodyear Tire & Rubber Co., Akron, was recently awarded a 20-year service pin.

Major William Ryan, the only Akron air ace, who served two years with the Australian Flying Corps overseas, has returned to the employ of The Goodyear Tire & Rubber Co., Akron, as an instructor in the factory school.

Lieutenant C. V. Newbold, former attorney of the accounting department of The Goodyear Tire & Rubber Co., Akron, was killed in the battle of Soissons. His widow has been given the Distinguished Service Medal awarded for gallant conduct.

The India Tire & Rubber Co., Akron, originally incorporated under the laws of the State of Ohio as "The India Rubber Company," on December 1, 1916, has now changed to the longer name. Its factory is at Mogadore, a suburb of Akron, where the company owns 19 acres of land with waterpower rights. The factory building proper is two stories high, with basement 60 by 232 feet, besides an "L" of the same height, 40 by 80 feet, of steel, brick and concrete construction. Until recently the concern has manufactured fabric tires, but it is now making cord tires.

The directors are: J. M. Alderfer, J. K. Williams, D. A. Grubb, Paul C. Searls, A. T. Kingsbury, J. W. Chamberlain, H. Lloyd Williams, C. C. Fonten, G. W. Santee, E. A. Armstrong and J. S. Fishburn. The company is capitalized at \$400,000 common stock and \$100,000 preferred, of which \$375,000 of the common stock has been sold at par.

The Republic Rubber Corp., Youngstown, has elected Harvey J. Woodard and Mark W. Roe vice-presidents, the former to have charge of sales and the latter to be in charge of the plant.

The Oak Rubber Co., Ravenna, has purchased a brick factory building three stories in height, 50 by 100 feet, with a floor space of 25,000 square feet. There are several smaller buildings on the site. New equipment is being installed for an increased production of toy balloons, the company's specialty.

The Victory Rubber Co., Springfield, has added four new men to its force. L. H. Cooke is to be in the capital financial department; Ira A. Stowe has been appointed district sales manager in Southern territory; E. D. Valentine has been placed in charge of installing new rubber-working machinery in the engineering department, and Frank X. Lothschuetz will cover the Ohio territory as a salesman.

The company recently completed a two-story building of brick and concrete, which is being used exclusively for pneumatic tire production. The new "Victor" cord tire will soon be ready for the trade. Preliminary tests are said to be very gratifying.

The company is to organize an export department which will include direct representation in Europe and South America.

The Premier Rubber & Insulation Co., Dayton, has increased its capitalization from \$100,000 to \$150,000 and has enlarged its factory floor space by the addition of a three-story factory. The concern makes insulation products of hard rubber, Bakelite,

Condenser or Premierite, the latter being one of its own specialties.

The K & W Rubber Co., Ashland, has removed its factory and general office to Delaware. A new factory building of modern brick construction has been erected, covering 30,000 square feet. The site covers about 13 acres of ground. In addition to "Maxotires," the company will manufacture other rubber goods, for which purpose suitable machinery and equipment is to be installed.

The Cincinnati Automotive Trade's Association, 654 Main street, Cincinnati, has elected the following officers: A. C. Mundew, president, Glouster Supply Co.; E. N. Stern, vice-president, C. & D. Auto Supply Co.; R. R. Woolley, treasurer, Buckeye Tire Repair Co.; Ralph R. Curl, secretary, H. W. Johns-Manville Co.; finance committee—J. W. Brumbaugh, I. J. Cooper Rubber Co.; W. W. Robertson, Miami Vulcanizing & Rubber Co.; G. A. Jackson, Dixie Vulcanizing Co. In addition to the officers the board of directors includes R. Herold, Herold Motor Car Co.; Paul Schneider, Auto Tire & Repair Co., and E. J. Leesman, Firestone Tire & Rubber Co.

The McGraw Tire & Rubber Co., East Palestine, has just completed plans for insuring its employees to the amount of more than \$1,000,000. The premiums will be paid by the company. Special features include automatic increase of the amount of each policy as the employee's time of service increases; a special disability clause whereby in case of permanent disability the amount of the policy will be paid in monthly instalments; the payment of the face value of the policy to the beneficiary at the death of the employee; and a conversion clause which enables the holder of the policy to continue the insurance after leaving the company's employ. The life insurance plan is augmented by a benefit association carried on by employees, insuring financial protection against unemployment, illness, or accident. Membership in this association also includes recreation privileges in the McGraw Club.

THE RUBBER TRADE IN MASSACHUSETTS.

By Our Regular Correspondent.

BUSINESS seems on the way to recovery from the slump which followed the signing of the armistice, and the prospects are for an early approach to normal. Tire manufacturers, who have been restricted to a percentage output, have increased their production. Boot and shoe manufacturers, most of whom are behind in deliveries, are pushing their mills to full tickets, while orders are being booked for next summer and fall delivery. Clothing men are perhaps less active than are manufacturers in some other lines. The makers of mechanicals report a fair trade with expectations of increase as the year progresses.

As a rule, the rubber goods manufacturers in this section are not only willing but anxious to return to their original positions the employees who enlisted, and who are now returning from the battle area. In many cases the manufacturers are really anxious to secure the services of these competent workers, for few, if any, of the rubber factories are oversupplied with experienced workmen.

An event of the month has been the Victory Shoe Style Show at Symphony Hall. This was a most pronounced success. It was timed to be held when the shoe buyers came to the Boston market, and a round-up of the leading hotels furnished a list of between 150 and 200 buyers, nearly every state in the Union being represented, as well as Canada and England. The show followed in general program the one held at the Copley Plaza Hotel last July, being under the same directorship, Robert J.

Walsh being manager. The floor of Symphony Hall was laid out so that exhibitors had spaces around the sides. On the stage was a beautiful floral arrangement, termed "The Garden of Styles," and from this was a flower-decorated runway on which the thirty or more chic and handsome models paraded, clad in becoming costumes of the coming spring and fall. Although these were simply accessory to the appropriate footwear worn, they enhanced greatly the attractiveness of the exhibits. At the back of the stage was a silvered screen on which was projected the name of the manufacturer whose shoes were being exhibited by the "model" at the moment. Band and orchestral music was furnished, and the capabilities of the great symphony organ were brought out by eminent organists. This was especially true during the afternoons, when, besides the organ recitals, moving pictures were projected on the screen, depicting the various processes of shoemaking, and views of the factories, where the exhibited samples of footwear were made. Naturally, most of the exhibits were those of shoes and leather, but there were a few representatives of the rubber trade.

The United States Rubber Co., New York City, exhibited its varied line of "Keds," a specially attractive kind of rubber-soled, cloth-upper shoes, in both high and low styles, and in white and a variety of colors. The booth was in charge of J. T. Cooper, of the Boston branch of the company.

The Hood Rubber Co., Watertown, showed its "Leisure" footwear, a high-class line of Oxfords and boots of fabric with rubber soles.

The Batterman Rubber Co., Framingham, exhibited its specialty "Toesans," footloths which are the exclusive production of this house. The Avon Sole Co., Avon, manufacturer of "Du-Flex" soles and heels, showed a fine variety of shoes equipped with these specialties.

The Foster Rubber Co. made a comprehensive exhibit of its great variety of "Catspaw" rubber heels.

So successful was this exhibition that the managers announce a repetition at Symphony Hall early next July during the usual summer influx of visiting buyers.

In 1916 the Boston Woven Hose & Rubber Co., Cambridge, inaugurated a plan to present to its older employees gold coins at New Year's. At that date 105 persons who had been in continuous service more than 10 years, were thus remembered. This year the number had increased to 190, who shared in the distribution at a meeting held at the plant on December 31. On account of the war savings campaign, the last two distributions have been in war savings stamps, the presentation being made by Mr. Fellows, factory manager. Addresses were made by George E. Hall, president and general manager, and by Henry B. Sprague, vice-president and treasurer. The latter claimed he was entitled to be called a veteran employee, having completed more than twenty years in the service of the company. At the meeting it was stated that eight employees had been with the company over thirty years, and four others twenty-five years.

A benefit plan has been put into effect by the Hood Rubber Co. at its factory in Watertown, by which employees, in case of sickness, will receive an allowance of from eight to twelve dollars a week, and in case of death, from \$200 to \$1,000. Any one who has been in the employ of the company for three months is eligible to the benefits, the lowest amounts being paid to those with such a term of service, while the highest go to those workers who have been employed five years or more. There is no cost to the employee. A curious fact is that an hour and a half after the plan went into effect a \$1,000 death benefit was paid. The plan affects about 7,500 employees, of whom approximately one-third are women.

William Jameson, superintendent of The Fisk Rubber Co., Chicopee Falls, has been elected president of the Board of Trade of that town.

The Social and Athletic Association of The Fisk Rubber Co., Chicopee Falls, has flooded its big park, thus making a skating rink, and has built a toboggan slide, which has in it an angle which will ensure exciting and exhilarating speed, and now the only thing necessary is freezing weather. Every employee's custom now is to consult the thermometer at least three times a day.

It may be remembered that the majority of the stock of the Boston Belting Co. and the Roxbury Carpet Co., whose factory adjoins the rubber mill, were purchased by Willett, Sears & Co., which organization later transferred its interests in these two corporations to certain banking interests in this city. William A. Gaston, prominent in financial, legal and political circles in this city, has been elected president of the two companies, and Henry B. Sprague, treasurer. The directors are Frederick E. Snow, Frank W. Knowlton, John C. Rice, Otis B. Prescott and William A. Gaston. It is reported that the business of these concerns will be pressed actively and will be divorced from the interests of Willett, Sears & Co., or any of their various enterprises. The Roxbury Carpet Co. has offices in the downtown district, but the business offices of the Boston Belting Co. will continue at the plant, 80 Elmwood street, Roxbury district. The new management proposes to push the business vigorously and to extend its trade.

The business of the Sterling Fountain Pen Co., which is owned and operated by the Davidson Rubber Co. of this city, is offered for sale by the latter. As may be remembered, the Davidson Rubber Co. has of late years reduced its items of production to a comparatively small number of specialties, preferring to manufacture in large lots rather than in great variety. The pen business does not fit in with this policy, neither does it go so well in a factory devoted mainly to soft rubber goods, while the distributing end is in the stationery instead of the drug trade. The Sterling Fountain Pen Co. was established in 1884, and has patents with several years to run.

James J. Rafferty, director of the Bureau of Commerce and Industry, Manila, Philippine Islands, is now in this country to explain the advantages of investments in a tropical country under the United States flag, rather than in countries under European governments. He advises rubber planting there, arguing that in any such emergency as that recently in the Federated Malay States, the American rubber industry would be free from domination by other governments. He called upon some of the larger rubber manufacturers here, explaining the peculiar advantages of raising rubber in our Far Eastern possessions.

William H. Moore, until recently assistant manager of the New England organization of The B. F. Goodrich Co., having been promoted to the position of manager of the Pittsburgh, Pennsylvania, branch of that company, was the guest of honor at a dinner given by his associates at the Copley Plaza Hotel, attended by 85 heads of departments and salesmen from the Boston headquarters and the branches at Worcester and Springfield, Massachusetts; Providence, Rhode Island; Manchester, New Hampshire; Burlington, Vermont, and Portland and Bangor, Maine, were present. Joseph J. Buckley, Boston manager of sales, in behalf of those present, tendered to Mr. Moore a handsome gold watch, chain, and charm in appreciation of him as a fellow worker. The dinner was supplemented by a theater party.

Mr. Moore entered the employ of the company nearly ten years ago, bringing to his new endeavors an extensive business experience. Determined to learn the business from the ground up, he worked first as a tire repairer, subsequently passing through other departments, absorbing practically their details, until he was advanced to the position he relinquishes to assume the more important one in Pittsburgh.

The old established firm of Chadbourne & Moore, manufacturers of elastic web at Chelsea, with offices at 179 Lincoln street, Boston, has been dissolved, and a corporation, known as Chadbourne & Moore, Inc., has been organized under the laws of Massachusetts, with a capital of \$400,000, which has taken over all the assets of the firm and will continue to carry on the business at the same Chelsea and Boston locations.

B. F. Chamberlin, organizer and former vice-president and general manager of the Walpole Shoe Supply Co., and later manager of the shoe supply department of the Revere Rubber Co., Chelsea, has taken over the business of that department, and will continue it with offices and stock rooms at 184 Summer street, Boston. Mr. Chamberlin organized the business in 1908, and successfully managed it as a branch of the Walpole Rubber Co. until 1914, when the latter company became financially embarrassed. The business was taken over by the Revere Rubber Co. and has been under Mr. Chamberlin's management up to the present. Besides other supplies for shoe manufacturers, he will continue to handle rubberized cloth and "Gem" insole duck and material.

At the meeting of the National Shoe Wholesalers' Association, held in Boston, January 9, 1919, George H. Mayo and Charles W. Barnes of the United States Rubber Co., explained the present rubber footwear situation and advised the wholesalers to send in their detailed orders as early as possible if they desired them completed in full. They told why: because workmen and workwomen could not be transferred from making one line of rubber footwear to another, some departments in the various factories were rushed to capacity and others running to part time on small tickets.

Robert L. Rice, sales manager of the Hood Rubber Co., Watertown, also addressed the meeting, and urged wholesalers to look closely after their tennis orders, as there was a likelihood of a greater demand than supply later in the season.

A. H. Elder, for many years connected with the Boston Belting Co., resigned from that company recently to accept a position on the sales force of the Electric Hose and Rubber Co., Wilmington, Delaware, and is representing that Company in New England with headquarters at 161 Devonshire St., Boston, Massachusetts.

George H. Hichborn, general manager of the United States Rubber Co., New York City, was one of the speakers at the thirty-third annual banquet of the Association of Railroad and Steamboat Agents at Young's Hotel, Boston, Saturday evening, January 11, 1919, at which about two hundred guests were present. Mr. Hichborn advocated the return of the railroads to private ownership.

The Boston Automobile Dealers' Association Show, to be held March 20-25, 1919, in Mechanics' Hall, Boston, will undoubtedly be a great success, as space is rapidly being allotted. The Motor & Accessories Manufacturers' Association will participate, and a large representation is expected.

THE RUBBER TRADE IN RHODE ISLAND.

By Our Regular Correspondent.

FOR the first time since the outbreak of the great world war in 1914, the beginning of the new year 1919 found a general shut-down among the rubber manufacturing establishments throughout Rhode Island. It was the first opportunity the mills had had for a complete overhauling and a thorough inventory. The Alice Mill and Millville plants of the Woonsocket Rubber Co., closed December 28 at noon and remained closed until Thursday, January 2. This shut-down gave a vacation to approximately 2,500 operators, 1,700 in the Alice Mill at Woonsocket and 800 in Millville. The National India Rubber Co. at Bristol and the Candee in New Haven were also closed during the same period. About 8,000 employees in all were affected.

James W. Franklin, superintendent of the footwear division at the factory of the National India Rubber Co., Bristol, was presented with a handsome electric lamp by the foremen and forewomen of that department as a Christmas remembrance. Isaac H. Gorman, foreman of the cutting department received a chair, and John Lavender, foreman in the footwear division, a shaving set.

Notices were posted at the factory of the National India Rubber Co., on January 15, announcing the following appointments: Edward I. Cooper, assistant superintendent of the footwear division; George E. Shaw, assistant superintendent of the wire division; Col. Andrew W. Anthony, foreman of the stitching department of the footwear division; John A. Wahlgren, assistant general sales manager of the wire division; and Lester K. Munroe, assistant treasurer.

* * *

On New Year's Eve, Harris Hall, Woonsocket, was the scene of a large gathering at the first annual concert and ball, under the auspices of the employees of the Alice mill, given for the benefit of the band. The hall was decorated with flags and bunting, and the band appeared for the first time in uniforms furnished by the corporation. A substantial sum was added to the band's fund.

* * *

Chief Justice Parkhurst of the Rhode Island Supreme Court has filed an important opinion of the court, during the past month, in the case of Eli Frank et al., receiver of the Dreadnought Tire & Rubber Co., against the Broadway Tire Co. of this city. Both sides took exceptions to decisions made by a justice of the Superior Court some time previously, in relation to a demurrer to a replication.

The main argument before the Supreme Court was on the question whether the receiver of a foreign corporation, the plaintiff corporation being engaged in business in Maryland, could maintain an action on a contract where the corporation had not complied with the statute requiring every foreign corporation not a Federal one to appoint a resident of this state as attorney upon whom all processes, including the process of garnishment, may be served. This is the only point that the Chief Justice thinks it necessary for the court to decide. Counsel for the plaintiff argued that as the receivers could not comply with the statute they and the interests they represented were not bound by it and ought not to be held to suffer the consequences of the Dreadnought company's default and that the receivers should be allowed to maintain the present suit.

Chief Justice Parkhurst says: "We found no ground for such contention. It is generally held that a receiver stands in the shoes of the person over whose estate he has been appointed and is clothed only with such rights of action as might have been maintained by such person."

Christmas was made a season of good cheer in reality in this community by a number of concerns connected with the rubber industry. Cash bonuses based on individual earnings were given to the employees of the Collyer Insulated Wire Co., Pawtucket, who had served a certain length of time. The Smith Webbing Co., Pawtucket, gave money to each employee in proportion to the individual's salary during the last five months. A Christmas present of \$50,000 was paid out by the Hope Webbing Co., of Pawtucket, to its 1,300 employees. In order to encourage thrift each employee received a large envelope containing in three equal amounts, a Liberty Bond of the fourth issue, War Saving Certificates and War Saving Stamps as well as a sum of money. This envelope was marked "March of the 1300," referring to the work of the 1300 employees of this concern during the period of the war.

* * *

The Tubular Woven Fabric Co., with a plant at Main Street, Pawtucket, has increased its capital stock from \$300,000 to \$350,000 according to its certificate filed at the office of the Secretary of State.

* * *

The American Electrical Works plant, at Phillipsdale, resumed operation Monday, January 6, after a two weeks' shut-down for overhauling of boilers and machinery and taking inventory.

* * *

The City Council of Newport has approved an appropriation of \$1,000 for 800 feet more or less of 2½-inch hose; \$200 for chemical hose, and \$150 for rubber clothing.

* * *

Harry Webster, of Milford, Massachusetts, formerly head draftsman for the American Wringer Co., Woonsocket, has been promoted to the position of production manager in charge of the entire output of the company.

* * *

The Bourn Rubber Co., has recently purchased another lot of land, with buildings thereon, located on Warren street, adjoining the present property of the concern.

THE RUBBER TRADE IN NEW JERSEY.

By Our Regular Correspondent.

ARTHUR E. FRISWELL, who has been connected with various rubber concerns in this country and abroad, is now associated with the New Jersey Cap Spring & Rubber Co., Inc., Jersey City, in the capacity of consultant and general utility man.

* * *

The Overman Cushion Tire Co., Inc., 250 West 54th street, New York City, is building a one-story building 60 by 180 feet and a powerhouse 50 by 53 feet as additions to its plant at Belleville.

* * *

The Dural Rubber Corp., Flemington, will add a new unit to its factory to take care of its production of tires and tubes, and a new office building to accommodate its increased business.

* * *

Henry L. Hornberger has given up the profession of advertising to become general sales manager of the Globe Rubber Tire Manufacturing Co., Trenton. He will make his headquarters at the New York office.

* * *

F. N. Hammerstrom has been made vice-president and supervisor of sales of the Essex Rubber Co., Trenton. He was

formerly general manager of the Thermoid Rubber Co., Trenton, and has recently been commercial manager of the Wellsbach Co., Gloucester, New Jersey.

Samuel J. Mullane has been promoted to the position of superintendent of the Mattson Rubber Co., Lodi. He has been in the employ of the company for fifteen years.

John A. Lambert, treasurer and general manager of the Acme Rubber Manufacturing Co., presided at the New Year's dinner given at the Trenton Country Club to the seventy-five boy caddies employed there. It was the fifth annual event of this sort for the youngsters that has been arranged by Mr. Lambert, who is chairman of the caddies' dinner committee. Mr. Lambert,



TRENTON COUNTRY CLUB CADDIES AT NEW YEAR'S DINNER.

Charles E. Stokes, vice-president of the Home Rubber Co., and others gave talks. A feature of the dinner was the singing of parodies on popular songs, in which the caddies paid their respects to the golf players. An orchestra furnished music for the occasion. Mr. Lambert is an expert golf player and takes a big interest in the boys employed at the club. In the accompanying photograph, the notch at the top indicates where Mr. Lambert is standing. His son Raymond is on his left in uniform.

Joseph H. K. Lambert, son of John A. Lambert, secretary-treasurer of the Acme Rubber Manufacturing Co., has received his honorable discharge from the Navy and will resume his duties as assistant manager of the Acme company. Mr. Lambert's other son, John R. Lambert, is a member of the Gas Defense Service, and is stationed in New York.

Edward M. LaRue, who has been in charge of the service department of The Empire Rubber & Tire Co. for the past five years, has gone to Kansas City, Missouri, to become assistant manager of the Empire branch store in that city.

The employees of the Ajax Rubber Co. are to organize a patriotic league and benevolent association, 100 per cent strong, to assist members who become maimed, ill, or disabled while in the employ of the company. It is also intended to promote the education, Americanization, and material welfare essential to both employer and employee.

The store of the Federal Tire and Accessory Co., Wrightstown, New Jersey, was gutted by fire recently. The loss is about \$3,000. The fire was caused by spontaneous combustion.

William Henry Sayen, Jr., treasurer of the Mercer Rubber Co., returned from France recently and gave an interesting talk on the war to the employees of the company. Mr. Sayen and his brother went to France last May as Y. M. C. A. workers with the French army. His work took him only a few kilometers

from the front and his closest call was when he and a friend were caught in a barrage and his friend's legs were blown off. On another occasion a German aviator blew off part of the roof above them with an aerial torpedo. Following Mr. Sayen's talk to the employees an entertainment with vocal and piano selections was held in the plant.

The good will and chattels of the North American Rubber Co., a Delaware corporation, with an establishment at 34 Parker avenue, Trenton, for the manufacture of tires, was sold by Sheriff Fred P. Rees recently to Solomon Mixer, of New York, for \$560. The automobiles were sold to different parties. After the United States District Court had appointed Anthony S. Brennan as receiver for the company it decided that the concern was not bankrupt and ordered the sale of the chattels by Sheriff Rees. The machinery, etc., were sold to satisfy a judgment of \$2,896.40, secured in the New Jersey Supreme Court by Robert C. Dunham, of New Brunswick, New Jersey.

Lieutenant Charles A. Wilson has received an honorable discharge from the Army and will again represent the Dural Rubber Corp., Flemington, New Jersey, in New York City. Because of his commercial knowledge Mr. Wilson was one of eight privates selected from 20,000 men at Camp McClellan as candidates for commission without going to training school. When the armistice was signed he had become sub-depot quartermaster at Camp Hancock and had been recommended for a captaincy.

The Joseph Stokes Rubber Co. made a substantial gift of money to the Poor Kiddies' Christmas Fund during the holidays. John A. Lambert, secretary-treasurer of the Acme Rubber Manufacturing Co., who was chairman of the last Red Cross drive, was also an active worker during the holidays.

THE RUBBER TRADE IN CONNECTICUT.

By Our Special Correspondent.

THE Todd Rubber Co., Waterbury, has been succeeded by F. H. Potter, Inc., as of January 3, 1919. The incorporators are: A. V. Miller, N. R. Bronson, F. H. Potter. The officers are: H. A. Hoadley, president; F. H. Potter, treasurer; N. R. Bronson, secretary. The concern is incorporated under the laws of the State for \$25,000. It will distribute Kelly-Springfield and Gillette tires exclusively in Waterbury, Naugatuck, Thomaston, Torrington, Winsted, Norfolk, and Canaan, and will probably add a line of wholesale and retail automobile accessories.

The Seamless Rubber Co. had an industrial open house night at the Y. M. C. A. on the evening of January 15. The entertainment included mass singing and an exhibition by the Senior Leaders' Club in the gymnasium, followed by a social program and light refreshments.

William LaPine, Danbury, is acting as distributor in the State for the fiber soles manufactured by the Norwalk Tire & Rubber Co., Norwalk. The output has increased 100 per cent during the last two months.

Each of the 500 employees of the Norwalk Tire & Rubber Co., Norwalk, received a War Savings Stamp for a Christmas present.

Thirty young women who have been employed in the gas-mask department of the Hartford Rubber Works, Hartford, gave a luncheon to celebrate the completion of the contract. A chair was presented to the foreman, Edwin R. Sawyer, and a smoking set and tobacco to the assistant foreman, Herbert Martin, by the "eye" table workers in the same department at the celebration which took place when these workers were laid off, following the signing of the armistice.

The Rubber Trade in Great Britain.

By Our Regular Correspondent.

THE AFTERMATH OF WAR.

THE SIGNING of the armistice did not, of course, bring all contract work to a close, though it meant that all pressure was suspended and overtime rendered unnecessary. The general opinion among rubber manufacturers is that the government departments have treated them very fairly where deliveries on contract were no longer required. As a rule the officials have discussed matters with the manufacturers, and where it was evident that hardship or loss would result from the goods being left on the manufacturers' hands, satisfactory terms have been arranged. The interest of the moment is the transfer from war requirements to civilian business and although the civilian demands are large, owing to depleted stocks, competition of the keenest character has set in at once. This is especially the case with waterproof goods on account of the large number of plants available.

COMPETITION IN THE PROOFING TRADE.

It is said that the number of spreading machines in Great Britain has increased three-fold during the war, and the problem is how to find work for them. Not only have old established firms largely increased their number of machines, but there are now new works in existence, and these latter have not the old trade connections that the former have. As one instance of the result of competition may be mentioned a certain proofing which fell from 1s. 6d. to 10d. per yard in the course of a few days. Competition of this sort in the old days meant increased use of substitute. Probably reclaims will now be in greater demand than substitute for reducing costs, though their use is more complicated owing to the calculations necessitated from their varying content of mineral matter. A large demand has sprung up lately from both sexes for the black-surface, single-texture waterproof. It is a good many years now since this class of goods was almost a monopoly of one or two firms, owing to the details of the manufacture not being generally known. At the present time these black-surfaced goods are being turned out successfully by most of the firms which specialize in spreading. They are now of all qualities and prices and the high-quality formula, which alone was used twenty-five years ago, has now to compete with many lower-grade formulas.

Business generally in all trades is in a very stagnant position as nobody seems inclined to buy anything. The idea is that prices must fall all around and purchases are being deferred wherever possible. This applies also to rubber chemicals; manufacturers and agents are pushing for contracts at figures which certainly show a decline on those which have been ruling, but buyers are holding off as they think better terms will shortly be forthcoming. The very keenness of sellers to fix up contracts is a proof of what they think.

Solvent naphtha has dropped but is still quoted over 3s. a gallon, making its careful use a necessity in competitive work.

It is understood that the whole situation as regards the influence of the greatly increased spreading capacity of proofing works in relation to the business likely to be available is a matter which is now engaging the close attention of the India Rubber Manufacturers' Association, and it will be interesting to watch developments.

Matters in the mechanical trade are in much the same state of suspended animation. The head of a prominent firm told me that new business recently had been of the most meager description, though this did not cause him any concern as he had plenty of work held up which he could now resume. The general election has naturally been a disturbing factor which was followed closely by the Christmas holidays.

In times of good business very few firms go into court to settle disputes and there has been very little litigation during the last four years. It is natural to suppose that the lawyers will now have a better time, and indeed I hear of one or two cases, and by no means insignificant ones, which are expected to come into court before long.

CONDUCT OF THE RAW RUBBER TRADE.

In some recent remarks on the raw rubber trade in "The Economist," it is stated that probably no trade is conducted in a more haphazard and unorganized manner, and this because of the large number of individual producers, keen competition between them and conflicting vested interests which are permitted to stand in the way of every reform. This results in extremely wide price fluctuations from time to time doing much harm to every branch of the trade.

As an attempt to deal with a situation in which there are very dangerous elements it is suggested that a "term" market should be established in London and that all British-owned rubber should as far as possible be shipped to this country. This has been done with useful effect in the case of coffee and some other markets. The further statements to the effect that the trade is faced with critical conditions in the near future, and that rubber will probably be selling for long periods at less than the cost of production will, by some authorities at any rate, be considered as couched in a too pessimistic tone.

RUBBER IN AIRPLANES.

Day by day we are being enlightened on matters which have been kept secret during the war, and airplane construction is a subject which is now being talked about openly by authorities from Lord Weir, the Air Minister, downwards. It certainly appears that we are on the eve of a great development of airplane construction all over the world, and the article in the December issue of THE INDIA RUBBER WORLD on "Rubber in Airplane Construction" is of timely interest to the rubber trade. Many rubber goods, of course, have been made for the service, but they have been made to specification and very little detail as to their specific use has been vouchsafed. Now that the seal of secrecy has been broken there will be scope for individual enterprise.

WASTE RUBBER SALVAGE.

This scheme, to which I made a brief reference on a former occasion, has now been developed and put into action. It is under the joint organization of the Ministry of National Service, the National Salvage Council, the British Red Cross and the Order of St. John of Jerusalem. The object is to provide funds for the operation of the Red Cross. Appeals have appeared in the press asking the public to bring all articles of rubber such as motor and cycle tires, hose, belting, clothing, hot water bottles, toys, etc., to certain central dumps established in large towns. The War Office has undertaken to purchase all of the rubber goods collected. If this is to be done on strict business lines I should say that it will require a super-expert to arrive at the market value of a dump.

JAR-RING TESTS.

The article on this subject in the December issue of THE INDIA RUBBER WORLD was of great interest. It certainly seems that goods of this sort should be sold with a guaranty that they are fit for the purpose intended if loss of money and disappointment in the household are not to result. Up to the last year or two the bottling of fruit had been carried out in only a few households, but the advent of peripatetic government lecturers explaining the process led, or was expected to lead, to its wide-

spread adoption. I say "was expected" because the business did not materialize to any extent. In the first year there was a shortage of glass bottles, and in the second season, owing to the large government calls on an attenuated fruit crop, there was practically nothing left for the public to bottle, and what fruit there was on the market was at almost prohibitive prices. As the fortunate recipient of some bottled fruit from the country, I have had an opportunity of examining the rubber rings which I found broke quite easily. Of course I do not say that there are no really good rings on the market, but it certainly seems desirable that only rings of a certain standard quality should be allowed to be put on the market.

THE WORDS "INDIA RUBBER" AS A TRADE-MARK IN THE ARGENTINE REPUBLIC.

By Herbert Langner.

THE recent action of the India Rubber, Gutta Percha and Telegraph Works Co., Limited (La Compañía de Talleres de Caucho, Gutta Percha y Telégrafos, Limitada), Buenos Aires, a branch of the company of the same name in Silvertown, England, in filing an application for the registration of the words "India Rubber" as its trade-mark in Argentina to cover india rubber and gutta percha, either in a raw state or as a manufactured product, will undoubtedly be of considerable interest to all manufacturers and exporters of rubber goods in the United States of America, not only for the reason that if this trade-mark is granted it will create a monopoly in its use by the India Rubber, Gutta Percha and Telegraph Works Co., Limited, and preclude anyone else from using it in the Argentine Republic; also, anyone using it, whether accidentally or otherwise, would be liable a year's imprisonment, a fine of \$500, and confiscation of all goods bearing the mark.

The effects of such a registration upon shipments of india rubber products from this country to Argentina are apparent. Every domestic manufacturer would have to avoid marking his goods with the words "India Rubber" and abstain from these words in describing his goods, so as not to infringe this trade-mark.

It is therefore easily seen that should the Argentine Trade-mark Office countenance this application, as seems to be the case, it may work a great hardship to American concerns doing business in Argentina and who may have described their products as made of india rubber.

The question naturally arises: Is anyone entitled to register as a trade-mark in Argentina an expression in common use in the English language? Can words like "Gum arabic," "Portland Cement," "Russia Leather," "Virginia Tobacco," "French Chalk," "Holland Gin," etc., all of which are common descriptive words, be considered registerable trade-marks in that country? This is apparently answered by a decision of the Argentine Federal Courts in an action brought by Borden's Condensed Milk Co. against Horlick's Food Co. on the question of the validity of the registration of the trade-mark "Malted Milk" in Argentina. The evidence showed that this product was made in large quantities in the United States of America, and that since "Malted Milk" was the descriptive name of a well-known product and indicated an article of a certain class, it did not constitute a good trade-mark, notwithstanding the fact that "Malted Milk" was an expression foreign to the Spanish language. If "Malted Milk" cannot properly be registered, then it would seem that "India Rubber" should not be registered, for the same reason.

The Argentine trade-mark law under which the present attempt to appropriate the mark "India Rubber" is being made, would, to the American mind, appear to be at fault, although a reference to the law defining what is registerable as a trade-mark in Argentina can leave no doubt that the words in question are not registerable. Article 3 of this law distinctly states

that terms or expressions which are in general use, and designations usually employed to indicate the nature of the article, or the class to which they belong, cannot be considered trade-marks. It would therefore seem that the interpretation of the law by the Argentine officials, rather than the law itself, is at fault, and that the present application to register "India Rubber" should not have been entertained by the Trade-mark Office. The application was advertised in the Argentine Official Journal, according to the Argentine law, for the purpose of bringing the mark to the notice of parties likely to be injured by its registration, and an opposition has been entered by a well-known American manufacturer



THE "SILVERTOWN" FACTORY IN BUENOS AIRES.

of rubber products, who contests the right of the British concern to secure a monopoly on these words. Its action in so doing, if successful, may be of benefit to the entire American industry and particularly to concerns exporting to Argentina.

SAMPLE FAIRS AT LYONS AND BORDEAUX.

The sample fairs to be held in Lyons and Bordeaux, in March and May, respectively, offer to American manufacturers an opportunity to become better acquainted with the products of France and its colonies as well as for the sale of American-made goods in those quarters.

It is suggested that it would be particularly advantageous for the American exhibitor to arrange to have his display transferred from Lyons to Bordeaux. The New York agent of the Lyons fair is Emil Garden, 21 Park Row, New York City. All exhibits for the Lyons fair must leave New York before February 5.

At the Lyons fair in 1918 there were more than 500 American exhibitors out of a total number of more than 3,000, and it was planned to erect a \$70,000,000 palace to house it in future.

As a result of the effort being made to increase the importance of Bordeaux as a transshipping port for the colonies of western and northern Africa, the predominating exhibits at the Bordeaux fair will be of colonial products, including rubber, oils and oil seeds, graphite from Madagascar, forestry products, etc. There will also be exhibits of chemicals and other products of the soil.

The Third Sample Fair held at Lyons in 1918, was a great success, but as none was held at Bordeaux last year, the coming exhibition there will be the Third Bordeaux Sample Fair. Prospective American exhibitors should communicate at once with the Comité d'Organisation et Administration de la Foire de Bordeaux, Hotel de Ville, Bordeaux, France, relative to securing space, and with the steamship companies concerning transportation accommodations, as the Bordeaux fair has no official representative in this country as far as known.

The Future of the Antwerp Rubber Market.

FOR four years, Antwerp, one of the world's great transit rubber markets, has been closed and its rubber trade completely wiped out. What will be its future now that the commerce of this port may be resumed?

Certainly business will return but slowly at best, for most former patrons have found other satisfactory sources of supply, and Belgian brokers will have to reestablish themselves from the ground up, so to speak. Lack of adequate ship tonnage will for a time be a great drawback. Moreover, economic forces altering the whole trend of the rubber trade have been set in motion by the war. Direct dealing between producing and consuming countries has become the rule, and to a considerable degree will continue. While this grew out of necessity, the results have shown that any transit market is, in principle, expensive and unnecessary, and the keen foreign trade competition likely to develop in the near future will tend toward a policy of eliminating all possible overhead charges.

In 1913 the total Belgian imports, mostly through the port of Antwerp, amounted to 32,438,360 pounds, the principal sources in pounds being as follows: Belgian Congo, 8,690,647; Great Britain, 6,676,314; Ceylon, 5,253,833; Netherlands, 2,993,538; Germany, 2,303,611; France, 2,087,644; Straits Settlements, 1,110,817.

Total exports for that year amounted to 24,400,770 pounds, indicating that only 8,037,590 pounds, or about one-fourth of the total imports, either were retained for use or remained in stock. The principal destinations of the exports in pounds were as follows: United States, 6,104,316; Germany, 5,944,162; Russia, 4,600,961; Netherlands, 2,586,973; France, 2,327,131; Great Britain, 1,578,819.

For three years prior to the war, Belgian crude rubber imports from Great Britain, Ceylon, Netherlands, Germany, and Straits Settlements had shown a steady increase, whereas imports from France had undergone a corresponding decrease, and those from Belgian Congo in 1913 were 1,275,954 pounds less than in 1912. Crude rubber exports from Belgium to the United States, Germany, Russia, and Netherlands for the

three years prior to the war had shown a steady increase, whereas exports to Great Britain had undergone a steady decrease, and those to France had maintained an approximate average. But many of these tendencies seem unlikely to continue.

The bulk of Belgian Congo rubber will doubtless go to Antwerp as in the past, but this rubber is derived chiefly from wild sources and has been diminishing rapidly. Great Britain, Ceylon, and Straits Settlements are successfully marketing their rubber to consuming countries and will continue to do so very largely, or through London, so that Belgian imports from these sources will in future correspond more nearly to the manufacturing needs of the country than hitherto. Germany no longer has African colonies producing rubber, and with a limited merchant marine following a complete rubber denudation will have little, if any, for re-export. Moreover, German interests are said to have contracted for a portion of the output of the Dutch East Indies, doubtless to be shipped direct or through Rotterdam, so that little of this rubber will reach Belgium through the Netherlands.

Germany will naturally prefer at first to deal with neutrals so far as possible, and Belgium, which has been one of the chief sufferers at the hands of the Hun, will prefer to have it so, notwithstanding commercial considerations that might sway other nations more remote from the tragedies of the war. This means

that Belgian rubber exports to Germany, which were more than double the rubber imports from Germany, will be relatively small for some years if a satisfactory market can be found elsewhere, and it probably can. The United States, Belgium's best former customer, has found direct shipments from the East so satisfactory that she will hardly go to Belgium for any consid-



EXAMINING RUBBER AT THE ANTWERP MARKET.



RECEIVING RUBBER AT ANTWERP.

erable quantity of rubber hereafter. Russia is still in too great a state of chaos to become an extensive early buyer, while such a quantity and variety of rubber is grown under the British flag that England will have little need to resort to Belgian sources. The likelihood of a resumption of former trade with France and the Netherlands is more hopeful, however.

All indications point to the conclusion that, although Antwerp will again take its place among the important rubber markets of the world, it will not soon attain the position it formerly held as a crude rubber mart.

REGULATIONS GOVERNING SINGAPORE STANDARD RUBBER QUALITIES.

THE Singapore Chamber of Commerce Rubber Association publishes in the "Straits Budget" of December 6, 1918, the regulations now governing Singapore standard rubber qualities.

The committee will consist of six members to meet twice weekly to examine all guaranteed samples submitted to them and establishing whether they are found to be: Singapore standard first latex crêpe or Singapore standard f.a.q. ribbed smoke sheets.

At any meeting a quorum shall consist of not less than three members.

The place of meeting is the board room of the Singapore Chamber of Commerce Rubber Association, at 11 a. m., on Tuesdays and Fridays. Sellers wishing to place samples before the committee for award, must have their samples at the board room, Chartered Bank Chambers (top floor), between the hours of 8.30 a. m. and 9.30 a. m. on these days. All samples submitted to be sealed and carefully checked by the sellers.

The committee shall have power to approve a sample notwithstanding an earlier refusal to issue an award, and shall also have power to cancel any award issued, should it be found necessary. In the event of an award being cancelled after the rubber has been tendered to the buyer, the seller may be called upon by the committee to replace the bulk with approved quality within three clear working days of notice of cancellation.

For such lots as are presented to the Standard Qualities Committee for award, a fee of \$5 per sample representing 10 tons or any part thereof shall be paid to the Singapore Chamber of Commerce Rubber Association, such fees to be paid at the time samples are submitted.

Only members of the Singapore Chamber of Commerce Rubber Association may submit lots for award, and written "Application for Award" forms in duplicate must accompany samples, stating details.

The individual members of the standard qualities committee shall receive such remuneration as shall be decided upon by the committee of the Singapore Chamber of Commerce Rubber Association.

On samples which have passed the Standard Qualities Committee, the secretaries will issue an award form (numbered consecutively), stating full particulars as to marks, etc. This award to be signed by the secretaries and handed to sellers. On such samples which are submitted for award, details of the bulk must be submitted on the label attached. After approval, the seal of the committee shall be affixed, with award number, by the secretaries.

In the event of any parcel or parcels of standard quality being sold for delivery during a specified month, samples representing the said parcel or parcels shall be submitted to the Standard Qualities Committee not later than four clear working days before the end of the month of delivery.

It shall be the desire of the Standard Qualities Committee to establish a standard of quality which may represent the bulk of the crop of No. 1 qualities, but the committee shall have power to vary their decision in accordance with ruling conditions. Lots of a mixed character (from various estates) bulked into one parcel shall not constitute standard quality.

First latex crêpe shall be well prepared dry rubber of good quality, of even color, and free from all stains, spots, or traces of oxidation.

F.a.q. ribbed smoked sheet shall be clean, tough rubber, free

from mold, dampness under or over-smoked sheets. Slight traces of air-bubbles may be allowed, but at the discretion of the Standard Qualities Committee.

All rubber sold as standard quality must be certified by the Standard Qualities Committees before tender, and sellers must be in a position to deliver the rubber at the time the tender is made. Tender forms must show the number and date of award, which award shall remain in force for a period of one month from the date of issue, and tenders must also show the reference number and name of original seller or original selling broker.

In no case will a seller be permitted to make first tender against a contract sold for delivery during a specified month any later than three working days before the end of the month of delivery.

No addition can be made to a tender, and if any party finds it necessary to split a quantity tendered, new tender forms must be made out, which forms must bear original particulars and state the name of the party who split the tender.

All tenders to be made on official forms, which are obtainable from the association. Each party to endorse the time of receipt on the form, and if the tender is intended for circulation, same must be passed on as promptly as possible and not later than one business hour after receipt. Business hours shall not include the period between 1 p. m. and 2 p. m. or after 4.30 p. m. on week days, and 12.30 p. m. on Saturdays.

Last buyer shall make application to the first seller for delivery within 24 hours of receipt of tender. The rubber to be delivered to the last buyer within 48 hours from the time of the receipt of this application.

Before delivery, the buyer shall deposit with the first seller 90 per cent of the estimated value of the rubber or approved banker's guarantee. When final weights are known, invoices and account sales must be promptly rendered and settled, upon which settlement first seller shall refund to last buyer any deposit which may have been made.

Samples of awarded lots tendered on contracts must be available for inspection in the secretary's sample room, at Exchange Buildings, at the time tender is made, and shall not be removed by other than last buyer who must collect same and weigh in with bulk at time of weighing.

All official tender forms shall be accompanied by seller's memorandum of tender which must state: date of contract, quantity sold, description, delivery, price, tender number and weight tendered, first seller's reference number.

TAPPING AREA AND PRODUCTION IN MALAY PENINSULA AND BRITISH NORTH BORNEO.

The area of rubber tapping in the Federated Malay States, in 1917, was 518,109 acres, 408,574 acres of which were in estates of 100 acres and over and 109,535 acres in estates of less than 100 acres, according to the "Agricultural Bulletin of the Federated Malay States." As the output for the Federated Malay States for 1917 was 79,831 tons, this represents an average annual yield of 345 pounds to the acre. If the yield is reduced to 200 pounds per acre, the total output would be 46,000 tons.

Johore exported 19,061 tons of rubber in 1917. The area in tapping was 117,000 acres, which means 361 pounds to the acre. In Kedah, 45,000 acres were tapped, 258 pounds to the acre. The output of Kelantan, for between 13,500 and 15,000 acres, was 1,490 tons; the yield for 1917 was, therefore, either 247 or 222 pounds per acre. The area under tapping in Malacca was estimated by the Resident to be 180,000 acres, with 120,000 acres in tapping, a yield of 300 pounds to the acre. In Penang, the area in tapping was 32,289 acres, or 273 pounds to the acre. In British North Borneo, the area under rubber was 34,828 acres, of which 21,400 acres were in full tapping; the output was 2,444 tons, 256 pounds per acre.

Recent Patents Relating to Rubber.

THE UNITED STATES.

ISSUED NOVEMBER 5, 1918.

- N**O. 1,283,441. Expandable annular packing. G. Bergeren, Brooklyn, N. Y.
- 1,283,468. Two-part rubber heel. W. H. Clarke, Akron, O.
- 1,283,520. Wheel and pneumatic tires. H. H. Hoffman, Columbus, Ohio.
- 1,283,733. Tire case. R. Hartzheim, assignor to The Fisk Rubber Co.—both in Chicago, Ills.
- 1,283,853. Demountable rim for tires. A. Mentzer, Duluth, Minn.
- 1,283,860. Fountain-pen cap. O. G. Mitchell, Brookline, assignor to Moore Pen Co., Boston—both in Mass.
- 1,283,874. Resilient tire. J. L. Ogden, Chicago, Ill.
- 1,283,944. Fountain pen. W. A. Staffeldt, Reading, Mich.
- 1,283,953. Hose-supporter clasp. H. J. Stuart, Derby, assignor to Robert N. Bassett Co., Inc., Shelton—both in Conn.
- 1,283,954. Hose-supporter button-clasp. H. J. Stuart, Derby, assignor to Robert N. Bassett Co., Inc., Shelton—both in Conn.
- 1,283,955. Hose-supporter button-clasp. H. J. Stuart, Derby, assignor to Robert N. Bassett Co., Inc., Shelton—both in Conn.
- 1,284,014. Turn sole with forepart of rubber compound with fibrous stitching-receiving element for single-faced stitches, etc. S. W. Winslow, Jr., Beverly, assignor to United Shoe Machinery Corp., Paterson, N. J.
- 1,284,178. Swimming web for the hand. J. A. Clarke, assignor to one-half to J. Zaranofski—both of Vincennes, Ind.

ISSUED NOVEMBER 12, 1918.

- 1,284,229. Demountable split rim for tires. J. A. Brown, Chicago, Ill.
- 1,284,232. Wind-shield cleaner. W. J. Burke, San Francisco, Calif.
- 1,284,296. Breast pump. J. F. McCleary, Findlay, O.
- 1,284,429. Puncture-proof material composed of metal plates coated with hard rubber and encased in soft rubber cushion. C. S. G. Nichols, Kansas City, Mo.
- 1,284,466. Resilient tire. F. E. Egan, Bisbee, Ariz.
- 1,284,525. Fountain pen. R. T. Wing, St. Cloud, Minn.
- 1,284,530. Pneumatic support for vehicles. W. G. Wood, Sacramento, Calif.
- 1,284,536. Double-cuffed sleeve-protector with elastic cord at wrist of inside cuff. B. J. Yaeger, Minneapolis, Minn.
- 1,284,632. Suspensory jacket-strap. R. C. Fine, Los Angeles, Calif.
- 1,284,633. Demountable rim for solid tires. W. R. Finlay, San Francisco, Calif.
- 1,284,832. Metal and rubber tire. J. B. Wallace, Mukwonago, Wis.

ISSUED NOVEMBER 19, 1918.

- 1,284,970. Motor-wheel with rubber tire. O. A. Anderson, Highland Park, Mich.
- 1,284,975. Rubber heel with friction plug. F. Berenstein, Chelsea, Mass.
- 1,285,012. Electric cable. C. P. Brodthagen, assignor to Hazard Manufacturing Co.—both of Wilkes-Barre, Pa.
- 1,285,027. Garter. Daniel G. Butts, assignor to Ivory Garter Co.—both of Orleans, La.
- 1,285,084. Rubber tire, with carcass composed of woven vegetable fabric and asbestos cloth, vulcanized together. R. J. Evans, Franklin, Pa.
- 1,285,103. Demountable rim for tires. W. H. Fox, assignor of one-half to Bernard W. Japs—both of Minneapolis, Minn.
- 1,285,296. Fountain pen. J. F. Marsh, New York City.
- 1,285,325. Belt composed of non-elastic and elastic elements. I. Nelson, Eagle Grove, Ia.
- 1,285,391. Pneumatic mattress. C. R. Robertson, assignor of one-half to O. Devenay—both of Columbus, O.
- 1,285,405. Double garment, with valves for admitting and emitting fluid such as hot water, for treatment of invalids. F. Sangioi, Worcester, Mass.
- 1,285,419. Cushion tire. M. Scrocco, New York City.
- 1,285,424. Tire insulator of asbestos cords woven around core of rubber, for insertion between inner pneumatic tube and outer shoe, or in body of outer shoe, of pneumatic tire. J. W. Stinson, Garden City, N. Y.
- 1,285,481. Thick reducer. M. V. Vincent, Brooklyn, N. Y.
- 1,285,507. Belt with elastic section, etc., for supporting artificial limbs. S. H. Waterman, Seattle, Wash.

ISSUED NOVEMBER 26, 1918.

- 1,285,604. Inner-tube protector for pneumatic tires. H. S. Blynt, Galipolis, O.
- 1,285,605. Resilient tire. A. Boerner, Scheveningen, Netherlands.
- 1,285,618. Pneumatic wheel with rubber tire. J. A. Carter, St. Louis, Mo.
- 1,285,719. Air-tube for pneumatic tire. I. B. Jeffries, Llanely, Wales.
- 1,285,722. Pneumatic tire with metallic casing. E. A. Jones, Los Angeles, Calif., assignor to Jones Holding Syndicate, Seattle, W. ash.
- 1,285,730. Vehicle tire. A. H. Keller, Philadelphia, Pa.
- 1,285,734. Fountain-pen cap and clip. I. W. Kessel, Brooklyn, N. Y.
- 1,285,741. Divers' suit. P. Konopka, Louisville, Ky.
- 1,285,757. Demountable rim for tires. S. R. McKay, assignor to The McKay Co.—both of Cleveland, O.
- 1,285,818. Balloon cycle. J. A. H. K. New York, N. Y.
- 1,285,871. Artificial foot. C. B. Winn, Buffalo, N. Y.
- 1,285,877. Golf ball. G. C. Worthington and W. E. Reichard, assignors to Worthington Ball Co.—all of Elyria, O. (Original application divided.)
- 1,285,878. Golf ball. G. C. Wentworth, Elyria, O.
- 1,285,879. Paving block of reinforced rubber for roadways, etc. G. Anderson, London, England.
- 1,285,944. Cushion wheel. H. B. Coats, Veederburg, Ind.
- 1,285,965. Auxiliary tread for pneumatic tires. C. A. Haxell, New Haven, Conn., assignor to F. J. Euerle, Hamden, and one-third to L. Artender, East Haven—all in Conn.
- 1,285,966. Tire protector. P. L. Harvey, Des Moines, Iowa.

- 1,286,030. Reinforced hard rubber structure. E. J. Kroegeer, Akron, O., assignor to The B. F. Goodrich Co., New York City.
- 1,286,081. Golf ball. W. Pearce, Akron, O., assignor to The B. F. Goodrich Co., New York City.
- 1,286,107. Fire-fencing tube of reinforced rubber. I. R. Renner, Akron, O., assignor to The B. F. Goodrich Co., New York City. (Original application divided.)
- 1,286,111. Liquid-disinfecting bottle-stopper. Theodore J. Snyder, assignor of one-fourth each to George S. Jacobs and Meyer H. Eichen-green—all of Chicago, Ill. (Continuation of application Serial No. 97,811, filed May 16, 1916. Renewed August 28, 1917. Serial No. 188,695. This application filed February 14, 1918. Serial No. 217,047.)
- 1,286,163. Demountable rim for tires. F. C. Walters, Akron, O.
- 1,286,169. Resilient heel. B. W. Brockett, Cleveland, O.
- 1,286,173. Demountable rim for tires. O. E. Edstrom, Oakland, assignor to United Remountable Rim Co., San Francisco—both in Calif.
- 1,286,176. Sole for turn shoes, consisting of rubber body and fibrous edges to permit stitching. G. Ferguson, Wollaston, Mass., assignor to United Shoe Machinery Corp., Paterson, N. J.

ISSUED DECEMBER 3, 1918.

- 1,286,198. Combination legging with resilient foundation. J. Aschheim, Celanese, N. Y. (Original application divided.)
- 1,286,206. Wheel rim for pneumatic tires. E. S. Beckman, assignor of one-half to W. F. Push, both of La Porte, Ind.
- 1,286,307. Elastic wheel with pneumatic and between inner rim and hub. S. C. Hatfield, Baltimore, Md.
- 1,286,348. Resilient wheel with pneumatic tube around hub. J. A. Kolby, C. P. Jensen and J. T. Nielsen, assignors to Kolby Wheel Co., all of La Grange, Ill.
- 1,286,396. Boyvine glove with sponge-rubber filling or padding. Z. G. Oldham, Los Angeles, Calif.
- 1,286,437. Toy firearm fitted by elastic bands. E. F. Sear, Collingswood, N. J.
- 1,286,514. Wheel rim for pneumatic tires. E. W. Bryan, Valdosta, Ga.
- 1,286,579. Ballonet inflator. R. Gammett, Akron, O., assignor to The B. F. Goodrich Co., New York City.
- 1,286,594. Wind-shield cleaner. M. Irye, Los Angeles, Calif.
- 1,286,655. Resilient tire with pneumatic tube. J. Krizek, assignor of one-third each to P. Kitchen and J. J. Pinck—all of Gallup, N. M.
- 1,286,727. Fountain pen. J. M. Reynolds, Montrose, Colo.
- 1,286,786. Wheel rim for automobile tires. R. B. Robinson, Kansas City, Mo.
- 1,286,798. Garment-belt with elastic element to provide for expanding. L. J. Schinman, New York City.
- 1,286,814. Golf ball. W. Taylor, Leicester, England.

THE UNITED KINGDOM.

ISSUED DECEMBER 11, 1918.

- 119,699. Truss with rubber pad. A. W. Lewis, 130 Commercial street, Malmouth.
- 119,746. Hygienic rubber lining with rubber piston. J. D. Marshall, 25 Chancery Court, Regent's Park, London.
- 119,752. Folding portable bath of waterproof sheeting, etc. J. L. McCrean, 13 Canadian General Hospital, Ore. Hastings, Sussex.
- 119,757. Doll with rubber hands and feet. L. Wilks, Dunningley, Great Woodcote Park, Purley, Surrey.
- 119,760. Cheesepanthers, corsets and abdominal belts having elastic inserts. A. Berger, 34 Trevor Square, Brompton Road, London.
- 119,771. Doll having head, limbs, etc., jointed to body by elastic cords. C. F. Green, 40 Hatton Garden, London.
- 119,812. Artificial leg with cushioning pad of rubber on front of foot. G. de C. Cellatani, 21 via del Quirinale, Rome, Italy.
- 119,838. Reinforced tire. W. A. Varner, Athens, Georgia, U. S. A.
- 119,866. Life-saving suit. I. E. Lemaie, 189 St. James' street, Montreal, Canada. (Not yet accepted.)
- 119,900. Pneumatic wheel with rubber tire. J. K. Marshall, Alderlands, Esher, Surrey.

ISSUED DECEMBER 18, 1918.

- 120,004. Rubber-coated wire stringing for tennis rackets, snow-shoes, etc. S. G. Lewis, Greensburg, Pa. U. S. A.
- 120,007. Resilient cushion wheel. A. L. W. Begg, 1482 Broadway, New York City, U. S. A.
- 120,008. Gas bag for motor vehicles. R. Russell, The Acres, Middleton, near Manchester.

THE DOMINION OF CANADA.

PUBLISHED OCTOBER 31, 1918.

- 186,797. Calf-leather shoe-plate. S. A. Moore, Medford, Ore., U. S. A.
- 186,811. Life-saving garment. M. F. Vukusav, West Oakland, Calif., U. S. A.
- 186,821. Anti-sliding tire-tread. The Dunlop Rubber Co., Limited, London, assignee of C. Macbeth, Birmingham—both in England.
- 186,922. Test-cups for milking machine. The Perfection Manufacturing Co., assignee of L. Dinnesen—both of Minneapolis, Minn., U. S. A.
- 186,967. Covered rubber hose with compressible filler between hose and cover. H. W. Goodall, Philadelphia, Pa., U. S. A.
- 186,974. Pneumatic cushion tire. L. Hofmeister, Milwaukee, Wis., U. S. A.
- 186,986. Tennis racket with rubber-coated stringer. S. G. Lewis, Greensburg, Pa., U. S. A.
- 186,997. Cushion tire. I. I. McLeod, née Gresham, Lakeland, Fla., U. S. A.

- 187,038. Reinforced tire casing. The Burdick Tire & Rubber Co., assignee of A. S. Burdick and J. C. Hermann—all of Chicago, Ill., U. S. A.
- 187,039. Hose with expansible inside tube. The Canadian Consolidated Rubber Co., Limited, Montreal, Que., assignee of W. T. Cole, Newton, Conn., U. S. A.
- 187,070. Pneumatic cushion wheel. E. G. Gallagher and A. Schader, assignee of one-third interest—both of New York City, U. S. A.
- 187,138. Resilient tire. H. A. Naylor, Valparaiso, Chile, S. A.
- 187,159. Armored inner tube for pneumatic tires. L. Wenzel, Jr., Pittsburgh, Pa., U. S. A.
- 187,171. Hand tool for applying rubber and liner strips. The Canadian Consolidated Rubber Co., Limited, Montreal, Que., assignee of I. Rettell, Detroit, Mich., U. S. A.
- 187,179. Inner liner for pneumatic tires. S. T. Davis, Pittsburgh, and J. S. Demetrios, assignee of one-half interest, Clairton—both in Pa., U. S. A.
- 187,181. Demountable rim for tires. L. M. Cooper and H. McConnell, assignee of one-half interest—both of Detroit, Mich., U. S. A.
- 187,199. Vacuum bottle with rubber tube for conveying live and condensed steam to and from body-engaging cup. A. F. Daniel, Commerce, Okla., U. S. A.

NEW ZEALAND.

ISSUED NOVEMBER 14, 1918.

- 39,995. Tire casing. J. H. Gill and J. D. Rea—both of Hinch street, Dunedin, N. Z. (Designate with No. 40084.)
- 40,083. Tire casing. (See No. 39,995.)
- 40,250. Automobile fender with inflated cushion on fender-bar. F. F. Benson, Chinoak, Illano, Montana, U. S. A.

AUSTRALIA.

ISSUED OCTOBER 1, 1918. TO AMERICANS.

- 6,028. Ventilating garment seal having edges protected with rubber linings and secured by elastic strip and adhesive covering strips. C. B. Shane, 232 West Monroe street, Chicago, Ill., U. S. A.

TRADE MARKS.

THE UNITED STATES.

- NO 98,760. Representation of black oval with inner line of white, bearing representation of garter-clasp and the words Nu-Way Garters. G. Abraham, New York City, assignee to E. Abraham, trading under firm name of Nu Way Garter Co., New York City, U. S. A.
- 106,127. The word NEPTUNE—insulated wire. Atlantic Insulated Wire & Cable Co., Jersey City, N. J.
- 107,894. The word NATON, water-pump and fountain pens, etc. Hinks, Wells & Co., Birmingham, Eng.
- 108,681. The word CHICO, pneumatic rubber tires, tubes and tireproof tires. Chicago Cyclic Rubber Co., Chicago, Ill.
- 109,025. The word DURAL, rubber tubes for vehicle tires. Rural Rubber Corp., Flemington, N. J.
- 109,171. The word OXY, above picture of a mass adjusting garter, cut-out against background of pattern in colossus men's garters. Eagle Garter Co., New York City.
- 110,113. The word NUBREX, for reinforced rubber composition shoes for boots and shoes. Thos. H. Logan Co., Hudson, Mass.
- 110,304. The word REOOR, rubber tires. The National Tire & Rubber Co., East Palestine, O.
- 110,842. Representation of the word circle containing letter S printed in red at upper and lower ends and white in middle, with the letters O and N printed in red at upper and lower curved portions of the S, men's garters. John Hoban, Ottawa, Ill.
- 111,213. The word CARBAXIN, conveyor belts made of rubber reinforced with fabric. The B. F. Goodrich Co., New York City.
- 111,293. Representation in silhouette of Ajax rolling a tire—pneumatic tire accessories, namely, tale, combination-gum, combination tube-gum, cushion-gum and tread-gum. Ajax Rubber Co., Inc., Milbrook, N. Y.
- 111,311. The word PARAVENT, wire corsets, hose supporters, abdominal supporters, hip confiners, etc. Treo Co., Inc., New York City.
- 112,155. The word LIVERSAL—rubber soles and heels. Woodbury Shoe Co., Beverly, Mass.
- 112,438. Representation of the sole of a foot, with shoe outline drawn around it, bearing the words THE WALKER'S NEWCASTLE, ROASTED—leather, cloth, and rubber boots, shoes, and slippers. Hannan & Sons, Brooklyn, N. Y.
- 112,869. The word FILEREY—rubber heels. C. C. Stolzberg, Elvira, O.
- 112,880. The word FILEREY—hating caps made of rubber, raincoats and caps made of rubber, etc. Wm. Filene's Sons Co., Boston, Mass.
- 112,929. The word AMPERE—curves stitched belting. Victor Balata & Textile Belting Co., Eanson, Pa.
- 113,054. Silhouette of AJAX rolling a tire—rubberized or frictioned fabric. Ajax Rubber Co., Inc., Milbrook, N. Y.
- 113,065. The word ARCADIA—rubber hose, pneumatic tires, inner tubes, and rubber belting. New Jersey Car Spring & Rubber Co., Inc., Jersey City, N. J.
- 113,336. Representation of a double-outlined oval enclosing the letters T, R, & C—rubber heels. Taunton Rubber Co., Inc., Taunton, Mass.
- 113,617. The word LIBERTY—boots and shoes of leather, canvas or fabric. W. H. McElwain Co., Boston, Mass.

THE DOMINION OF CANADA.

- 23,920. The words LIGHTNING TREAD and the representation of a streak of lightning—automobile tires of rubber and fabric. Carlisle Cord Tire Co., Inc., New York City, U. S. A.
- 23,921. Representation of three-leaved clover, each leaf enclosing representation of flat-iron—seals, presses and stamps wholly or partially of metal and wholly or partly of rubber. N. B. McK. Jones, Toronto, Ont.
- 23,944. The words WAX, and the representation of a whirled foot goods, namely, articles of rubber or balata, including solid tires, pneumatic tires and tubes, hose, belting, packing, molded goods, tubing, and tire accessories. The Goodyear Tire & Rubber Co., Akron, Ohio, U. S. A.
- 23,949. The letters P. B. C. mon-metallic vehicle tires and tubes. The Brunswick-Balle Gollender Co., Chicago, Ill., U. S. A.

- 23,959. The word SAMSON—all kinds of dental appliances. A. L. Larose, Montreal, Que.

THE UNITED KINGDOM.
TO AMERICANS.

- 382,169. The words PENNSYLVANIA VACUUM CUP preceded and followed by the letters V and C forming a monogram—rubber tires. Pennsylvania Rubber Co., Jeannette, Pa., U. S. A. (Care of McKenna & Co., 31-34 Basinghall street, London, E. C. 2.)
- 385,316. The word VAC—rubber boots and shoes, and boots and shoes principally of rubber and partially of wool, cotton, linen or silk. Mishawaka Wooden Manufacturing Co., Hill and Water streets, Mishawaka, Ind., U. S. A. (Care of Marks & Clerk, 57-58 Lincoln's Inn Fields, London, W. C. 2.)

AUSTRALIA.

TO AMERICANS.

- 22,423. The words MME. LEBMAN in fancy script lettering—sanitary goods and appliances of all kinds included in Class 11. A. Stein & Co., 1149 West-Congress street, Chicago, Ill., U. S. A.

DESIGNS.

THE UNITED STATES.

- NO 52,630. Angle-guard for shoes. Patented November 12, 1918. Term 14 years. E. S. Bott, assignor to La Crosse Rubber Mills—both of La Crosse, Wis.
- 52,650. Tire. Patented November 12, 1918. Term 14 years. J. E. Hale, assignor to The Goodyear Tire & Rubber Co.—both of Akron, O.
- 52,686. Tire casing. Patented November 12, 1918. Term 14 years. O. L. Weaver, assignor to The Stan Rubber Co.—both of Akron, O.
- 52,701. Tire. Patented November 19, 1918. Term 14 years. J. E. Hale, assignor to The Goodyear Tire & Rubber Co.—both of Akron, O.
- 52,702. Tire. Patented November 19, 1918. Term 14 years. A. Kanze, Berkeley, Calif.
- 52,703. Tire. Patented November 19, 1918. Term 14 years. A. Kanze, Berkeley, Calif.



- 52,704. Tire. Patented November 19, 1918. Term 14 years. A. Kanze, Berkeley, Calif.
- 52,706. Golf ball. J. C. Robertson, assignor to St. Mungo Manufacturing Co., both of Glasgow, Scotland.
- 52,712. Golf ball. A. Turner, assignor to North British Rubber Co.—both of Edinburgh, Scotland.

THE DOMINION OF CANADA.

- 4,479. Tire. Patented October 5, 1918. Hercules Rubber Co., Limited, Inc., Brampton, Ont.
- 4,480. Tire. Patented October 5, 1918. Dunlop Tire & Rubber Goods Co., Limited, Toronto, Ont.
- 4,481. Tire. Patented October 5, 1918. Dunlop Tire & Rubber Goods Co., Limited, Toronto, Ont.

A NEW VEGETABLE WAX.

Samples of wax gathered from the wax palm, known in Ecuador as the gualte, and samples of Mexican candleilla wax are being exhibited in San Francisco by the Bureau of Foreign and Domestic Commerce. Markets are sought for these two commodities. The candleilla wax is of light color and very hard with a high melting point. Purified, it will make the best quality of candles, lasting and giving a brilliant light. Dissolved in turpentine it makes excellent varnish, and it is also used in the manufacture of shoe polish, phonograph records, electric insulation, as a substitute for beeswax, etc.

COMMERCIAL AGREEMENT BETWEEN FINLAND AND SWEDEN.

Rubber and products thereof purchased in Sweden by Finnish buyers must now be paid for in goods up to 100 per cent. of their value, as rubber is merchandise in Class 1, which is that of the highest value. For goods in Class 2, Finland must pay Sweden 60 per cent. in merchandise and the balance in cash. For articles in Class 3, payment must be made 20 per cent. in goods and the balance in Finnish money; and several other countries seem to be contemplating similar arrangements to make international trade possible.

Crude Rubber During 1918.

THE YEAR opened with a slight upward tendency which, however, was not maintained. There was so little spot rubber on the market that the demand fell off. Then came the railroad congestion, with the resulting embargoes, and the government order shutting down factories. Toward the end of January accumulations of rubber began pulling up at Pacific ports owing to the breakdown of the transcontinental freight service. On January 29, first latex, spot, was 55 cents, and upriver fine, spot, 58 cents.

During February manufacturing interest was entirely lacking and dealers showed no desire at all to accumulate supplies, so that all activity ceased. The railroads resumed, under unprecedented difficulties, the eastward movement of rubber from the Coast. The President's proclamation licensing all imports, including crude rubber, resulted in a firm undertone. Quotations on February 26 were: first latex crêpe, spot, 55½ cents, and upriver fine, spot, 57 cents.

Dullness characterized the market during the first half of March, but in the third week it began to be feared that arrivals at Pacific ports would be greatly reduced owing to the taking over of the Dutch ships. Importers and manufacturers, therefore, came into the market with good-sized orders. Prices accordingly advanced and remained at the higher levels even after the demands were satisfied, as buyers were showing an interest in forward positions. On March 28 first latex crêpe, spot, was 59 cents, and upriver, spot, 61 cents.

Very little business was done during the first three weeks of April, but a very heavy buying movement followed a meeting of a special rubber trade committee with the War Trade Board at Washington on April 18. This conference discussed the problem of rubber imports in connection with the ever-increasing demands for shipping to and from Europe. What was said at the meeting did not transpire, but manufacturers and shorts participated in sending prices up sharply in an excited market. First latex crêpe, spot, reached 71 cents, and upriver fine, 69 cents. By the last of the month latex was one cent lower, but upriver did not decline.

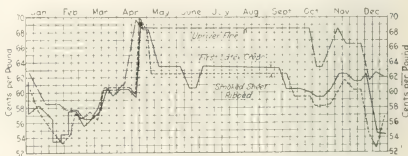
Government control of crude rubber importations became effective on May 1. Under the option and guaranty clause the Government optioned the standard grades of crude rubber at the following prices, c. i. f. New York: standard smoked sheet, 62 cents; first latex crêpe, 63 cents; fine Pará, 68 cents—these prices not to apply to rubber contracts in force prior to May 1, 1918. Imports for the three months beginning May 1 were limited to 25,000 tons, government requirements coming first, the balance to be allocated to each manufacturer at the rate of 7/16 of his consumption during 1917. Then the Government fixed prices for all other grades. All of these innovations were accepted by the rubber trade with equanimity.

The market was stagnant during the month of June. The large consumers had bought forward plantation rubber to the limit of their allocations. It is true that rubber free from the import restrictions was in continued demand, but the supply was soon exhausted. Later in the month maximum prices on jelutong, gutta siak, gutta percha and balata were fixed by the Government.

During July the market was virtually dead, partly under the influence of the three months' experimental restriction period, which began on May 1, and partly because of waiting to learn from Washington what regulations would be enforced for the balance of the year. Manufacturers' allocations had evidently been covered, for very few certificates appeared. Standard plantation grades for future shipment were quoted as low as 42 cents, New York. A few small lots of free rubber were sold by importers against similar quantities to be shipped against allocation certi-

fications from stocks bought in the Far East prior to May 8, and for which no marketing provision had been made in the government regulations.

For August and September the Government decided to permit the importation of 16,666 tons of crude rubber, the needs of the United States and allied governments coming first, the balance being allocated to manufacturers at the rate of 3/8 of 1/6 of their consumption during 1917; manufacturers not operating at full capacity in 1917 to receive allocations according to a special formula. It was also ordered that the number of tire casings and tubes produced and the amount of rubber used during



FLUCTUATIONS OF UPRIVER FINE, FIRST LATEX CRÊPE AND SMOKE SHEET RUBBER SPOT RUBBER DURING 1918.

August and September should only be 50 per cent of the production and consumption during 1917. Pará's were quoted at 60 to 61 cents for August-September shipment during the latter part of August, but the consuming demand was limited to small quantities for immediate requirements.

Quiet market conditions prevailed during September. Crude rubber imports were fixed at 25,000 tons for October, November and December, according to previous allocations. Toward the middle of the month considerable free rubber was offered by manufacturers who were overstocked, and sales were reported to have been made at prices ranging from 51 to 61 cents for crêpe and 49½ to 60 cents for ribs. Trading in allocation certificates was an unusual feature of the market, and the Far East received attention from manufacturers, relieving the distress in that quarter to some extent.

The October market was extremely dull. Orders for allocated and free rubber were infrequent and unimportant in volume. Allocated rubber remained firm, latex ranging from 37 to 42 cents, and ribs from 35½ to 40 cents. Free rubber prices ranged from 58½ to 62 cents for latex and 57½ to 61 for ribs. Prices on allocated Pará grades varied but little; upriver fine, from 56 to 58 cents. The price on free rubber ranged from 62 to 66 cents for upriver fine.

For a brief period after November 11 the market condition improved, and the Government permitted the importation of 7,500 tons over and above the amount previously allowed for the period ending December 31. Allocated rubber was quoted on November 12 at 51 cents for latex and 49 cents for ribs. Free rubber prices on November 26 were: 60 cents for latex and 52 cents for ribs. At the same time, upriver fine was quoted at 66 to 68 cents.

During December quietness characterized the market. All restrictions as to the quantities of rubber that might be imported were removed. Import licenses were thenceforth to be granted regardless of quantities involved. Government option prices were withdrawn and undertakings as to maximum values were no longer required; the rubber, however, to be consigned to The Rubber Association and the usual guaranties required. Balata, gutta percha, gutta siak and jelutong are included in the term rubber as used in this paragraph. On December 26 first latex crêpe was 54 cents, and upriver fine, 61 cents.

Review of the Crude Rubber Market.

NEW YORK.

A COMATOSE market, with occasional slight signs of animation, is not what an optimist likes to review. We positively decline to join the ranks of the discouraged, however, as the needs of the world for rubber products are too great for the present apathy to continue very long. Whatever troubles rubber men may be facing they can at least be glad that the last government shackles were removed on January 20, when the War Trade Board announced that importations of crude rubber, jelutong, balata, gutta siak, gutta percha, scrap, and reclaimed rubber are no longer to be consigned to The Rubber Association of America, and also that importers of crude rubber are no longer under the necessity of cabling license numbers to their shippers.

Annual inventories of stocks have been claiming attention and machinery which had been used to the limit for war production is being repaired. Production of rubber goods must soon start, probably not with a rush, but sufficiently to enable us to register a steady monthly improvement from now on.

The Singapore Government has cancelled the compulsory regulations regarding baled rubber that required a minimum of 220 pounds for sheets and 165 pounds for crepe to be packed in five cubic feet.

PLANTATIONS.—On the 7th of January spot latex was 58 cents, January-February shipments 56 cents; spot ribs were 58 cents, January-February shipments 56 cents; spot No. 1 amber crepe was 55 cents, January-February shipments 50 cents; spot No. 1 brown crepe was 38 cents, January-February shipments 36 cents.

On January 27 spot latex was 52 cents, April-December shipments 49 cents; spot ribs were 51 cents, April-December shipments 47 cents; spot amber crepe was 47½ cents, April-December shipments 45 cents.

PARAS.—On January 7 spot upriver fine was 64¼ cents, January-February shipments 60 cents; spot upriver coarse was 34½ to 35 cents; spot upper caucho ball was 35 cents, February-March shipments 34½ cents; spot cameta was 25 cents, February-March shipments 24 cents; spot islands coarse was 24 cents, February-March shipments 23 cents.

On January 27, spot upriver fine was 59½ cents; spot upriver coarse was 35½ cents, February-March shipments 35½ cents; upper caucho ball was 34 cents; spot islands coarse was 24 cents; spot cameta was 24 cents.

NEW YORK QUOTATIONS.

Following are the New York spot quotations, one year ago, one month ago and on January 25, the current date:

PLANTATION HEVEA—	Feb. 1, 1918.	Jan. 1, 1919.	Jan. 25, 1919.
First latex crepe.....	58 @	54 @	51½ @
*Hevea first crepe.....	58 @	54 @	51½ @
*Amber crepe No. 1....	48 @	48 @	49 @
*Amber crepe No. 2....	47 @	47 @	48 @
*Amber crepe No. 3....	46 @	46 @	47 @
*Amber crepe No. 4....	45 @	45 @	46 @
*Brown crepe, thick clean	44 @	45 @	45 @
*Brown crepe, thin clean	44 @	45 @	46 @
*Brown crepe, thin specky	42 @	40 @	40 @
*Brown crepe, rolled....	38 @	35 @	33 @
*Smoked sheet, ribbed—			
standard quality....	54 @	52 @	50 @
*Hevea ribbed smoked			
sheet.....			
*Smoked sheet, plain—			
standard quality....	53 @	51 @	49 @
*Hevea plain or			
smooth smoked sheets			
unsmoked sheet,			
standard quality....	51 @	49 @	48 @
*Hevea unsmoked			
sheets.....			
Colombo scrap No. 1....	41 @	38 @	35 @
Colombo scrap, No. 2....	39 @	36 @	33 @

BRAZILIAN PARAS—	Feb. 1, 1918.	Jan. 1, 1919.	Jan. 25, 1919.
Upriver fine.....	58 @	61 @	58½ @
Upriver medium.....	52 @	55 @	53 @
Upriver coarse.....	38 @	35½ @	34½ @
Upriver weak.....	40 @	51 @	45 @
Upper caucho ball.....	37 @	35 @	33½ @
Islands fine.....	47 @	52 @	49 @
Islands medium.....	40 @	45 @	43 @
Islands coarse.....	24 @	23½ @	22 @
Cameta.....	24½ @	24 @	22½ @
Lower caucho ball.....	52½ @	31 @	32 @
Peruvian fine.....	53 @	**56 @	**56 @
Tapajos fine.....	53 @	57 @	55½ @

AFRICANS—	Feb. 1, 1918.	Jan. 1, 1919.	Jan. 25, 1919.
Niger flake, prime.....	46 @	47 @	28 @
Niger flake, extra No. 1	46 @	47 @	24 @
Benguela, extra No. 1	29 @	**33 @	32 @
Benguela, No. 2, 32½%	28 @	**29 @	30 @
Congo prime, black {	46 @	47 @	46 @
upper.....			
Congo prime, red upper	46 @	47 @	**48 @
Rio Nunez ball.....	63 @	**55 @	**55 @
Rio Nunez sheets and	63 @		
strings.....			**55 @
Conakry niggers.....	63 @	**55 @	**55 @
Massai sheets and strings	63 @	**55 @	**55 @

CENTRALS—	Feb. 1, 1918.	Jan. 1, 1919.	Jan. 25, 1919.
Corinto scrap.....	37 @	37 @	36 @
Esmeraldas sausage...	36 @	36 @	36½ @
Central scrap, a and d	35 @	35½ @	36 @
strip, 75 per cent....	33 @	33 @	33½ @
Central wet sheet, 25%	25 @	26 @	27 @
(unsalable, 10% guarantee)			24 @
Guayule, dry.....			33 @
			46 @

MANICOBAS—	Feb. 1, 1918.	Jan. 1, 1919.	Jan. 25, 1919.
Ceara negro heads....	22 @	35 @	@
Ceara scrap.....	28 @	35 @	@
Manicoba (basis 30% loss washing and drying).....	41 @	@	40 @
Mangabeira thin sheet.	40 @	@	38 @

EAST INDIAN—	Feb. 1, 1918.	Jan. 1, 1919.	Jan. 25, 1919.
Assam crepe.....	37 @	36 @	37 @
Assam onions.....	45 @	44 @	45 @
Penang block scrap....	35 @	38 @	42 @

BALATA—	Feb. 1, 1918.	Jan. 1, 1919.	Jan. 25, 1919.
Block, Ciudad Bolivar.	72 @	73 @	69 @
Colombia.....	55 @	58 @	59 @
Panama.....	51 @	57 @	58 @
Surinam sheet.....	80 @	87 @	93 @
amber.....	88 @	95 @	90 @

PONTIANAK—	Feb. 1, 1918.	Jan. 1, 1919.	Jan. 25, 1919.
Banjermassin.....	13 @	14 @	14½ @
Palembang.....	18 @	20 @	18½ @
Pressed block.....			21 @
Sarawak.....			12 @

GUTTA PERCHA—	Feb. 1, 1918.	Jan. 1, 1919.	Jan. 25, 1919.
Gutta Siak.....	20 @	23 @	24 @
Red Macassar.....	2.00 @	3.00 @	2.95 @

*Rubber Association of America nomenclature.

**Nominal.

RECLAIMED RUBBER.

New developments were lacking in the reclaimed rubber market during the past month. The inactivity on the part of the consuming trade is attributable to the hesitancy that dominates most industries in the period of reconstruction. The demand has been of a routine nature, but of sufficient volume to maintain prices that are unchanged from those quoted a month ago.

NEW YORK QUOTATIONS.

JANUARY 25, 1919.

Subject to change without notice.

Standard reclaims:	Feb. 1, 1918.	Jan. 1, 1919.	Jan. 25, 1919.
Floating.....			.35 @
Friction.....			.35 @
Mechanical.....			.12 @
Red.....			.20 @
Shoe.....			.11 @
Tire, auto.....			.17½ @
truck.....			.13 @
White.....			.24 @

THE MARKET FOR COMMERCIAL PAPER.

In regard to the financial situation, Albert B. Beers, broker in crude rubber and commercial paper, No. 68 William street, New York, advises as follows:

During January there has been a fair demand for commercial paper, principally from out-of-town banks, the best rubber names going at 5 1/2 to 6 per cent, and those not so well known 6 to 6 1/2 per cent.

MARKET CABLE SERVICE FROM SINGAPORE.

The following report of the auctions held at Singapore has been cabled by The Waterhouse Co., Limited:

Date.	Crépe.	Ribs.	Market.
January 30	42 1/2	41	Uncertain.

Rates to Pacific Coast have been reduced to \$35 per cubic ton. Cargo space plentiful.

WEEKLY RUBBER REPORT.

GUTHRIE & CO., LIMITED, Singapore, report (December 13, 1918): At the weekly rubber auction held yesterday and today, demand was on a very limited scale, the manufacturing interests being practically out of the market. Prices of standard grades show only a slight weakening, but the state of market may be judged from the fact that only 638 tons were sold out of 1,567 tons available.

Ribbed smoked sheet was difficult of sale, and the top prices of 7 1/2 cents is 1 cent below last week's best. Fine pale crépe was in good demand and is unchanged at 75 cents. Lower grade crépe was the special enquiry of the market and fine and good browns show an advance of 3/4 cent.

The following was the course of values:

	In Singapore per Pound.	Sterling Equivalent per Pounds in London.
Sheet, fine ribbed smoked	76 1/2 @ 7 1/2	2/10 1/2 @ 2/11 1/2
Sheet, good ribbed smoked	57 1/2 @ 6 1/2	1/9 3/4 @ 2/0 3/8
Sheet, plain smoked	55 1/2 @ 6 1/4	1/8 3/4 @ 2/0 1/4
Crepe, fine pale	73 @ 7 1/2	2/10 1/2 @ 2/11 1/2
Crepe, good pale	60 @ 7 1/2	1/10 @ 2/0 1/4
Crepe, fine brown	52 @ 6 1/2	1/7 3/4 @ 1/10
Crepe, good brown	44 1/2 @ 5 1/2	1/6 3/4 @ 1/8 1/2
Crepe, dark	39 1/2 @ 5 1/2	1/5 1/2 @ 1/8 1/2
Crepe, light	35 @ 5 1/2	1/5 1/2 @ 1/8 1/2
Scrap, virgin and pressed	28 @ 5 1/2	1/4 @ 1/8 1/2
Scrap, lower	21 @ 5 1/2	10 1/2 @ 1/8 1/2

*Quoted in S. S. Currency.

COMPARATIVE HIGH AND LOW RUBBER SPOT PRICES.

	January.	1917.
Plantations.		
First latex crepes	\$0.58 @ 0.52	\$0.59 @ 0.52 1/2
Smoked sheet ribbed	.56 @ .51	.58 @ .50
Paras:		
Upriver fine	.61 @ 58 1/2	.63 @ 57
Upriver coarse	.56 @ 54	.57 @ 53
Islands, fine	.54 @ 49	.51 @ 47
Islands, coarse	.50 @ 22 1/2	.26 1/2 @ 24 1/2
Cameta	.55 @ 23 1/2	.26 1/2 @ 24 1/2

*Fixed only to January 26.

CRUDE RUBBER ARRIVALS AT THE PORT OF NEW YORK.

(The Figures Indicate the Weight in Pounds.)

	Paras.	Fine.	Medium.	Coarse.	Caucho.	Cameta.	Totals.
DECEMBER 26. By the <i>Paras</i> , from Para:							
Alden's Successors, Limited	64,073	.....	.....	.....	.....	.....	64,073
Hagopian & Brinn	11,300	.....	.....	.....	.....	.....	78,400
F. R. Henderson & Co.	54,800	.....	129,460	75,670	.....	.....	259,930
Pell & Dumont, Inc.	2,388	.....	44,798	58,562	.....	.....	105,748
By the <i>Sergipe</i> , from Para and Manaoas:							
Alden's Successors, Limited	44,140	.....	.....	.....	.....	.....	44,140
Hagopian & Brinn	201,600	.....	.....	.....	.....	.....	201,600
F. R. Henderson & Co.	138,600	.....	98,600	95,000	137,500	.....	468,300
Meyer & Brown	376,320	.....	44,800	.....	.....	.....	421,120
General Rubber Co.	2,880	.....	33,600	301,600	.....	.....	338,080
Pell & Dumont, Inc.	23,572	.....	44,798	168,562	.....	.....	236,932
F. R. Henderson & Co.	.....	.....	15,300	.....	.....	.....	15,300
By the <i>Gravosa</i> , from Para:							
H. J. Johnston & Co.	14,000	.....	45,000	11,000	120,000	33,000	343,000
General Rubber Co.	.....	.....	.....	.....	.....	.....	168,000
F. R. Henderson & Co.	57,800	.....	.....	35,400	15,000	.....	108,000

ARRIVALS AT THE PORT OF NEW YORK.

	POUNDS.
JANUARY 7. By the <i>Karimata</i> , from Batavia:	
General Rubber Co.	1,550,020
F. R. Henderson & Co.	45,050
J. T. Johnstone & Co.	1,640,070

GUAYULE TO NEW YORK.

	POUNDS.
DECEMBER 28. All rail from Eagle Pass, Texas:	
Continental-Mexican Rubber Co.	84,700
DECEMBER 31. All rail from Eagle Pass, Texas:	
Continental-Mexican Rubber Co.	77,250
JANUARY 15. By the <i>El Almirante</i> , No. 19, from Galveston via Laredo, Texas:	
Continental-Mexican Rubber Co.	60,400
JANUARY 22. All rail from Laredo, Texas:	
Continental-Mexican Rubber Co.	59,000

	POUNDS.
JANUARY 2. All rail from Eagle Pass, Texas:	
Continental-Mexican Rubber Co.	113,100

CRUDE RUBBER ARRIVALS AT PACIFIC COAST AS REPORTED.

	POUNDS.
[Ports of arrival not given.]	
DECEMBER 18. By the <i>Tokai Maru</i> , from Singapore:	
Rubber Trading Co.	145,600
DECEMBER 19. By the <i>Suzo Maru</i> , from Singapore:	
Rubber Trading Co.	232,960
JANUARY 17. By the <i>Huak Wn.</i> , from the Far East:	
J. T. Johnstone & Co.	67,848
JANUARY 19. By the <i>Shanghai Maru</i> , from Singapore:	
Rubber Trading Co.	168,000
JANUARY 21. By the <i>Ying</i> , from Singapore:	
J. T. Johnstone & Co.	51,500
DECEMBER 26. By the <i>Matsumoto Maru</i> , from Kobe:	
J. T. Johnstone & Co.	75,920
DECEMBER 30. By the <i>Naka Maru</i> and <i>Yokohama Maru</i> , from the Far East:	
J. T. Johnstone & Co.	56,672
JANUARY 4. By the <i>Arabia Maru</i> , from the Far East:	
J. T. Johnstone & Co.	116,308

[Dates of arrival not given.]

	POUNDS.
By the <i>Atsuta Maru</i> , from Singapore:	
F. R. Henderson & Co.	153,000
By the <i>Korea Maru</i> , from Singapore:	
F. R. Henderson & Co.	183,700
By the <i>Montague</i> , from Singapore:	
F. R. Henderson & Co.	99,950
By the <i>Kaifu Maru</i> , from the Far East:	
Fred Stern & Co.	176,280
By the <i>East Wing</i> , from the Far East:	
Fred. Stern & Co.	338,400
By the <i>Grayson</i> , from the Far East:	
Fred. Stern & Co.	105,480
By the <i>Key West</i> , from the Far East:	
Fred. Stern & Co.	24,480
By the <i>Yakayak</i> , from the Far East:	
Fred. Stern & Co.	9,000
By the <i>Singhi Maru</i> , from the Far East:	
Fred. Stern & Co.	219,780

	POUNDS.
AT SAN FRANCISCO.	
DECEMBER 18. By the <i>Pondel</i> , from Batavia:	
General Rubber Co.	528,000
DECEMBER 21. By the <i>Rindjani</i> , from Batavia:	
General Rubber Co.	972,400
Fred. Stern & Co.	266,580
By the <i>Shanghai Maru</i> , from the Far East:	
General Rubber Co.	1,250,180
DECEMBER 26. By the <i>Tenyo Maru</i> , from Singapore:	
General Rubber Co.	589,120
Fred. Stern & Co.	102,960

	POUNDS.
AT SEATTLE.	
DECEMBER 23. By the <i>Grayson</i> , from Singapore:	
General Rubber Co.	1,688,960
F. R. Henderson & Co.	465,920
Fred. Stern & Co.	105,480
DECEMBER 29. By the <i>Easterling</i> , from Singapore:	
Meyer & Brown	134,100
Fred. Stern & Co.	173,934
F. R. Henderson & Co.	83,600
General Rubber Co.	351,680
JANUARY 19. By the <i>Kanahram</i> , from the Far East:	
Meyer & Brown	280,000

CRUDE RUBBER ARRIVALS AT PACIFIC COAST AS STATED BY SHIP'S MANIFESTS.

	POUNDS.
SEATTLE AND TACOMA.	
[Figures 180 pounds not to the case or bale.]	
TO AKRON, OHIO.	
DECEMBER 23. By the <i>Grayson</i> , from Singapore:	
The B. F. Goodrich Co.	333,360
The Goodrich Tire & Rubber Co.	915,120

	POUNDS.
DECEMBER 20. By the <i>Fa-tai-tung</i> , from Singapore, via Kobe:	
Firestone Tire & Rubber Co.	221,760
TO NEW YORK.	
DECEMBER 16. By the <i>Atsuta Maru</i> , from Penang, via Yokohama:	
Poel & Kelly	14,760
By the <i>Grayson</i> , from Singapore, via Shanghai:	
Alden's Successors, Limited	30,420
The Boston Insulated Wire & Cable Co.	3,960
Curry, McPhillips & Co.	109,080
F. R. Henderson & Co.	318,960
J. T. Johnstone & Co.	132,000
United States Rubber Co.	1,533,960
DECEMBER 24. By the <i>Suzo Maru</i> , from Singapore, via Yokohama:	
Rubber Trading Co.	216,900
DECEMBER 30. By the <i>Easterling</i> , from Singapore, via Kobe:	
Charles T. Wilson Co.	69,660
United States Rubber Co.	185,760
Alden's Successors, Limited	5,940
Robinson & Co.	121,140
J. Littlejohn & Co.	181,980
Ed. Meyer & Co.	162,480
Meyer & Brown	67,590
Rubber Importers & Dealers	177,660
Poel & Kelly	238,480
DECEMBER 30. By the <i>Easterling</i> , from Penang via Kobe:	
F. R. Henderson & Co.	35,100
Robinson & Co.	4,320
W. R. Grace & Co.	43,380
DECEMBER 30. By the <i>Easterling</i> , from Port Swettenham, via Kobe:	
Robinson & Co.	27,540
DECEMBER 31. By the <i>Naka Maru</i> , from Penang, via Kobe:	
Rubber Trading Co.	175,860
Robinson & Co.	306,000
Poel & Kelly	87,480

	POUNDS.
TO SEATTLE, WASH.	
DECEMBER 30. By the <i>Fa-tai-tung</i> , from Singapore, via Kobe:	
Alden's Successors, Limited	78,200
Robinson & Co.	4,320
J. Littlejohn & Co.	185,920
R. W. Grace & Co.	26,900
Raw Products Co.	54,000
Fred. Stern & Co.	173,934
Mitch & Co. Limited	495,180
United Malaysian Rubber Co.	60,480

*Footnote—The figures under this head and under Crude Rubber Arrivals at Pacific Coast as Reported, have been obtained from different sources; repetitions may therefore occur.

*Arrived at Tacoma.

DECEMBER 30. By the <i>Easterling</i> , from Penang, via Kobe:	POUNDS.	VALUE.
F. R. Henderson & Co.....	19,980	
J. T. Johnson & Co.....	85,860	105,840

3552 cases shortshipped.

DECEMBER 30. By the <i>Easterling</i> , from Port Swettenham, via Kobe:	POUNDS.	VALUE.
Alden's Successors, Limited...	7,560	
Robinson & Co.....	4,860	12,420
DECEMBER 31. By the <i>Shinkoku Maru</i> , from Penang and Singapore, via Kobe:	POUNDS.	VALUE.
Mitsui & Co., Limited.....	108,180	
Poel & Kelly.....	24,300	
L. Littlejohn & Co.....	99,540	
Thornton Rubber Co., Limited.....	11,520	
Dunlop Tire & Rubber Goods Co., Limited.....	52,200	295,740

JANUARY 19. By the <i>Kamo Maru</i> , from Colombo, via Yokohama:	POUNDS.	VALUE.
Poel & Kelly.....	22,680	

DECEMBER 23. By the <i>Grayson</i> , from Singapore, via Shanghai:	POUNDS.	VALUE.
L. Littlejohn & Co.....	190,440	
United Malaysian Rubber Co., Limited.....	40,320	
Fred. Stern & Co.....	105,480	336,240

TO WATERTOWN, MASS.

DECEMBER 23. By the <i>Grayson</i> , from Singapore, via Shanghai:	POUNDS.	VALUE.
Hood Rubber Co.....	408,600	

DECEMBER 30. By the <i>Easterling</i> , from Singapore, via Kobe:	POUNDS.	VALUE.
Hood Rubber Co.....	235,800	

DECEMBER 31. By the <i>Shinkoku Maru</i> , from Penang, via Kobe:	POUNDS.	VALUE.
Hood Rubber Co.....	487,800	

Arrived at Tacoma.

GUTTA PERCHA.

TO NEW YORK.

DECEMBER 30. By the <i>Easterling</i> , from Singapore, via Kobe:	POUNDS.	VALUE.
Indus & Co., Inc.....	960	

CANADA VIA VANCOUVER.

PLANTATIONS.

DECEMBER 31. By the <i>Shinkoku Maru</i> , from Penang:	POUNDS.	VALUE.
Miner Rubber Co., Limited.....	8,920	

TO GUELPH, ONT.

DECEMBER 30. By the <i>Easterling</i> , from Singapore, via Kobe:	POUNDS.	VALUE.
The F. E. Partridge Co., Limited.....	30,240	

DECEMBER 31. By the <i>Shinkoku Maru</i> , from Penang, via Kobe:	POUNDS.	VALUE.
The F. E. Partridge Co., Limited.....	30,240	

TO HAMILTON, ONT.

DECEMBER 30. By the <i>Easterling</i> , from Singapore, via Kobe:	POUNDS.	VALUE.
Boston Insulated Wire & Cable Co.....	1,800	

TO KITCHENER, ONT.

DECEMBER 31. By the <i>Shinkoku Maru</i> , from Penang, via Kobe:	POUNDS.	VALUE.
Kanban Rubber Co., Limited.....	40,320	

TO MONTREAL, QUE.

DECEMBER 30. By the <i>Easterling</i> , from Singapore, via Kobe:	POUNDS.	VALUE.
Rubber Importers & Dealers Co.....	39,600	

TO SHERBROOKE, QUE.

DECEMBER 30. By the <i>Easterling</i> , from Singapore, via Kobe:	POUNDS.	VALUE.
Panther Rubber Manufacturing Co.....	8,280	

DECEMBER 31. By the <i>Shinkoku Maru</i> , from Penang, via Kobe:	POUNDS.	VALUE.
Panther Rubber Manufacturing Co.....	53,460	

TO TORONTO.

DECEMBER 30. By the <i>Easterling</i> , from Singapore, via Kobe:	POUNDS.	VALUE.
Van der Linde Rubber Co., Limited.....	30,240	

DECEMBER 31. By the <i>Shinkoku Maru</i> , from Penang, via Kobe:	POUNDS.	VALUE.
Alexander Macpherson Co.....	30,240	

DECEMBER 30. By the <i>Easterling</i> , from Singapore, via Kobe:	POUNDS.	VALUE.
The Goodyear Tire & Rubber Co., Limited.....	51,600	

DECEMBER 31. By the <i>Easterling</i> , from Malacca, via Kobe:	POUNDS.	VALUE.
Dunlop Tire & Rubber Goods Co., Limited.....	8,640	

DECEMBER 30. By the <i>Easterling</i> , from Penang, via Kobe:	POUNDS.	VALUE.
The Goodyear Tire & Rubber Co., Limited.....	40,320	

DECEMBER 31. By the <i>Shinkoku Maru</i> , from Penang, via Kobe:	POUNDS.	VALUE.
Gutta Percha & Rubber Ltd.....	97,480	

DECEMBER 30. By the <i>Easterling</i> , from Penang, via Kobe:	POUNDS.	VALUE.
Van der Linde Rubber Co., Limited.....	33,820	

DECEMBER 31. By the <i>Easterling</i> , from Penang, via Kobe:	POUNDS.	VALUE.
Dunlop Tire & Rubber Goods Co., Limited.....	47,880	

The Goodyear Tire & Rubber Goods Co., Limited.....	POUNDS.	VALUE.
Goods Co. Limited.....	93,660	
American Express Co.....	120,420	384,660

TO VANCOUVER.

DECEMBER 31. By the <i>Shinkoku Maru</i> , from Penang, via Kobe:	POUNDS.	VALUE.
Hercules Rubber Co., Limited.....	12,600	

DECEMBER 30. By the <i>Easterling</i> , from Penang, via Kobe:	POUNDS.	VALUE.
The Goodyear Tire & Rubber Co., Limited.....	129,660	141,660

DECEMBER 31. By the <i>Shinkoku Maru</i> , from Singapore, via Kobe:	POUNDS.	VALUE.
Rawling, Davis & Co.....	45,900	

SAN FRANCISCO.

PLANTATIONS.

DECEMBER 20. By the <i>Rindjani</i> , from Batavia:	POUNDS.	VALUE.
The Rubber Association of America, Inc.....	1,159,020	

Fred. Stern & Co.....	POUNDS.	VALUE.
281,160	1,440,180	

DECEMBER 26. By the <i>Tenyo Maru</i> , from Yokohama:	POUNDS.	VALUE.
East Asiatic Co., Limited.....	125,460	

Frank P. Dow & Co.....	POUNDS.	VALUE.
102,960		

Alden's Successors, Limited.....	POUNDS.	VALUE.
26,640		

The B. F. Goodrich Co.....	POUNDS.	VALUE.
87,660		

Swinehart Tire & Rubber Co.....	POUNDS.	VALUE.
65,340		

United States Rubber Co.....	POUNDS.	VALUE.
464,040	872,100	

JANUARY 17. By the <i>Shinky Maru</i> , from Hongkong:	POUNDS.	VALUE.
Alden's Successors, Limited.....	69,660	

Freestone Tire & Rubber Co.....	POUNDS.	VALUE.
410,380		

Mayer & Brown.....	POUNDS.	VALUE.
49,320		

L. Littlejohn & Co.....	POUNDS.	VALUE.
233,820		

Fred Stern & Co.....	POUNDS.	VALUE.
215,280	978,660	

GUTTA PERCHA.

DECEMBER 20. By the <i>Rindjani</i> , from Batavia:	POUNDS.	VALUE.
British Bank of South America.....	209,400	

RUBBER IMPORTS AND EXPORTS AT MASSACHUSETTS.

BER, 1918.

Imports of rubber and rubber substitutes:	POUNDS.	VALUE.
From.....	3, 06,313	\$973,813

Exports of rubber and rubber substitutes:	POUNDS.	VALUE.
From.....	11,209	\$4,673

Imports of rubber and rubber substitutes:	POUNDS.	VALUE.
From.....	11,209	\$4,673

Exports of rubber and rubber substitutes:	POUNDS.	VALUE.
From.....	11,209	\$4,673

Imports of rubber and rubber substitutes:	POUNDS.	VALUE.
From.....	11,209	\$4,673

Exports of rubber and rubber substitutes:	POUNDS.	VALUE.
From.....	11,209	\$4,673

Imports of rubber and rubber substitutes:	POUNDS.	VALUE.
From.....	11,209	\$4,673

Exports of rubber and rubber substitutes:	POUNDS.	VALUE.
From.....	11,209	\$4,673

Imports of rubber and rubber substitutes:	POUNDS.	VALUE.
From.....	11,209	\$4,673

Exports of rubber and rubber substitutes:	POUNDS.	VALUE.
From.....	11,209	\$4,673

Imports of rubber and rubber substitutes:	POUNDS.	VALUE.
From.....	11,209	\$4,673

Exports of rubber and rubber substitutes:	POUNDS.	VALUE.
From.....	11,209	\$4,673

Imports of rubber and rubber substitutes:	POUNDS.	VALUE.
From.....	11,209	\$4,673

Exports of rubber and rubber substitutes:	POUNDS.	VALUE.
From.....	11,209	\$4,673

Imports of rubber and rubber substitutes:	POUNDS.	VALUE.
From.....	11,209	\$4,673

Exports of rubber and rubber substitutes:	POUNDS.	VALUE.
From.....	11,209	\$4,673

Imports of rubber and rubber substitutes:	POUNDS.	VALUE.
From.....	11,209	\$4,673

Exports of rubber and rubber substitutes:	POUNDS.	VALUE.
From.....	11,209	\$4,673

Imports of rubber and rubber substitutes:	POUNDS.	VALUE.
From.....	11,209	\$4,673

Exports of rubber and rubber substitutes:	POUNDS.	VALUE.
From.....	11,209	\$4,673

Imports of rubber and rubber substitutes:	POUNDS.	VALUE.
From.....	11,209	\$4,673

Exports of rubber and rubber substitutes:	POUNDS.	VALUE.
From.....	11,209	\$4,673

Imports of rubber and rubber substitutes:	POUNDS.	VALUE.
From.....	11,209	\$4,673

Exports of rubber and rubber substitutes:	POUNDS.	VALUE.
From.....	11,209	\$4,673

Imports of rubber and rubber substitutes:	POUNDS.	VALUE.
From.....	11,209	\$4,673

Exports of rubber and rubber substitutes:	POUNDS.	VALUE.
From.....	11,209	\$4,673

Imports of rubber and rubber substitutes:	POUNDS.	VALUE.
From.....	11,209	\$4,673

Exports of rubber and rubber substitutes:	POUNDS.	VALUE.
From.....	11,209	\$4,673

Imports of rubber and rubber substitutes:	POUNDS.	VALUE.
From.....	11,209	\$4,673

Exports of rubber and rubber substitutes:	POUNDS.	VALUE.
From.....	11,209	\$4,673

Imports of rubber and rubber substitutes:	POUNDS.	VALUE.
From.....	11,209	\$4,673

Exports of rubber and rubber substitutes:	POUNDS.	VALUE.
From.....	11,209	\$4,673

Imports of rubber and rubber substitutes:	POUNDS.	VALUE.
From.....	11,209	\$4,673

Exports of rubber and rubber substitutes:	POUNDS.	VALUE.
From.....	11,209	\$4,673

Imports of rubber and rubber substitutes:	POUNDS.	VALUE.
From.....	11,209	\$4,673

Exports of rubber and rubber substitutes:	POUNDS.	VALUE.
From.....	11,209	\$4,673

Imports of rubber and rubber substitutes:	POUNDS.	VALUE.
From.....	11,209	\$4,673

Exports of rubber and rubber substitutes:	POUNDS.	VALUE.
From.....	11,209	\$4,673

Imports of rubber and rubber substitutes:	POUNDS.	VALUE.
From.....	11,209	\$4,673

Exports of rubber and rubber substitutes:	POUNDS.	VALUE.
From.....	11,209	\$4,673

Imports of rubber and rubber substitutes:	POUNDS.	VALUE.
From.....	11,209	\$4,673

Exports of rubber and rubber substitutes:	POUNDS.	VALUE.
From.....	11,209	\$4,673

Imports of rubber and rubber substitutes:	POUNDS.	VALUE.
From.....	11,209	\$4,673

Exports of rubber and rubber substitutes:	POUNDS.	VALUE.
From.....	11,209	\$4,673

Imports of rubber and rubber substitutes:	POUNDS.	VALUE.
From.....	11,209	\$4,673

Exports of rubber and rubber substitutes:	POUNDS.	VALUE.
From.....	11,209	\$4,673

Imports of rubber and rubber substitutes:	POUNDS.	VALUE.
From.....	11,209	\$4,673

Exports of rubber and rubber substitutes:	POUNDS.	VALUE.
From.....	11,209	\$4,673

Imports of rubber and rubber substitutes:	POUNDS.	VALUE.
From.....	11,209	\$4,673

Exports of rubber and rubber substitutes:	POUNDS.	VALUE.
From.....	11,209	\$4,673

Imports of rubber and rubber substitutes:	POUNDS.	VALUE.
From.....	11,209	\$4,673

Exports of rubber and rubber substitutes:	POUNDS.	VALUE.
From.....	11,209	\$4,673

Other rubber manufactures:	POUNDS.	VALUE.
To.....		
Canada.....		858
Costa Rica.....		94
Newfoundland.....		560
Cuba.....		6,436
Totals.....		\$9,848

RUBBER IMPORTS AND EXPORTS AT NEW YORK.

IMPORTS.

UNCLASSIFIED—free.

November, 1918.

Crack rubber:

From.....

Panama.....	POUNDS.	VALUE.
2,100		\$630

Mexico.....	POUNDS.	VALUE.
87,134		1,897

Brazil.....	POUNDS.	VALUE.
2,224,882		800,366

Colombia.....	POUNDS.	VALUE.
36,196		12,944

Venezuela.....	POUNDS.	VALUE.
7,400		2,128

British Guiana.....	POUNDS.	VALUE.
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EXPORTS OF INDIA RUBBER MANUFACTURES FROM THE UNITED STATES DURING THE MONTH OF NOVEMBER, 1918. (BY COUNTRIES.)

EXPORTED TO—	Belting, Hose and Packing.		Boots.		Shoes.		Druggists' Rubber Sundries.		Automobile.		Tires.		All Other Manufacturers of India Rubber.		Total Value.
	Pounds.	Value.	Pairs.	Value.	Pairs.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	
Europe:															
Denmark													90	\$230	\$230
France			64,342	\$250,341					144,467	\$102,365			5,511	\$5,507	\$358,213
Italy													18,149	\$21,118	\$21,118
Portugal	45,577	\$17,886					41	\$35	9,807	4,396			719	\$59	\$22,344
Spain									1,575	2,014			28	45	\$20,595
Sweden													14,743	\$3,246	\$2,467
Switzerland	15,006	6,584					580	651	43,009	38,881		1,357	37,798	\$2,797	\$78,913
England															
Totals, Europe	60,283	\$23,970	64,343	\$250,349			623	\$676	149,858	\$147,656		1,357	77,218	\$63,672	\$488,790
North America:															
British Honduras	105	\$46			935	\$901	162	\$109	470	\$1,059		39	\$71	41	\$54
Canada	64,434	35,598	4,030	\$14,581	19,201	\$7,619	18,107	20,577	21,523	20,861	8,798	4,264	176,311	\$160,035	\$273,835
Guatemala	571	263					30	11	11	747					1,218
Costa Rica	1,603	742							329	579	650	158	274	216	\$1,695
Nicaragua	136	100	24	48	229	1,099	322	189	249	383					\$2,488
Panama	362	273							16,550	13,867	9,050	3,612	5,539	4,077	\$28,319
Salvador	5,971	3,282	17	105	3,478	2,974	510	537	2,368	3,111			138	115	\$4,681
Mexico	379	510													
Miquelon, Langley, etc.	60,406	53,192	70	346	865	663	5,237	6,307	101,526	135,558	7,380	4,635	11,321	10,299	\$211,000
Newfoundland and Labrador	4,824	3,571	732	1,909	13,899	9,868	73	82	4,834	3,940			40	64	\$259
West Indies—													4,475	3,132	\$22,502
Barbados							64	207	3,046	4,043	388	159	134	170	\$4,579
Jamaica	620	400					913	115	715	1,546	171	139	473	455	\$2,297
Trinidad and Tobago	513	262			354	398	491	806	14,921	17,260	253	211	1,397	1,373	\$20,812
Other British West Indies	593	217			156	152	109	108	1,096	3,225	136	46	123	45	713
Cuba	57,817	33,459	898	667	9,123	8,266	4,863	8,672	242,044	235,057	14,300	8,881	58,954	72	\$37,237
Danish West Indies	11	18					3	573	600				72	423	\$4,795
French West Indies	48	20			1	43	48	288	328	119	137	278	222	756	\$2,756
Haiti	176	97			156	128	5	8	6,594	5,176	690	131	391	100	\$5,640
Dominican Republic	899	327						2	2,638	4,462	37	42	3,846	646	\$4,479
Dominican	2,848	1,731			636	701	222	241	4,244	5,792	981	1,264	1,213	1,170	\$10,899
Totals, North America	202,017	\$134,110	5,771	\$17,956	50,693	\$43,477	30,918	\$38,666	425,226	\$457,105	43,472	\$24,137	267,704	\$226,160	\$941,611
South America:															
Argentina	39,724	\$16,538					1,039	\$2,907	137,295	\$154,904					\$197,566
Bolivia	11,054	8,951							12,756	14,667					\$24,124
Brazil	6,416	4,363			3,251	1,920	3,389	3,414	48,945	40,584	1,447	843	5,625	8,652	\$60,276
Chile	49,926	32,846			3,024	2,763	514	860	74,727	85,589	16,915	8,139	15,248	11,027	\$141,224
Colombia	2,421	2,230			33	51	136	249	2,942	3,427	1,527	682	2,090	1,232	\$7,921
Ecuador	1,100	437							2,447	3,021					\$4,749
British Guiana	1,180	636			2,602	2,493	956	1,001	11,908	12,546	90	45	573	1,239	\$7,960
Dutch Guiana	198	13					23	23	550	640					\$676
Paraguay	6,788	4,931			319	449	20,831	29,226	1,046	750	5,284	5,540			\$40,896
Uruguay	6,788	4,931													
Venezuela	633	466					864	1,504	9,430	15,700	75	150	2,329	2,233	\$16,406
Totals, South America	119,035	\$71,904			8,946	\$7,248	7,240	\$10,407	321,339	\$357,999	21,113	\$10,644	50,018	\$54,394	\$512,596
Asia:															
China	6,762	\$7,351			2,733	\$1,997	429	\$509	9,920	\$13,306			2,041	\$1,805	\$26,968
Chosen	90	51													\$3,131
British India	9,846	7,079			1,613	1,354	2,810	3,331	10,412	5,658	30	\$56	7,294	5,655	\$23,101
Straits Settlements	12,600	14,345			576	656	92	80					1,795	1,199	\$9,335
Dutch East Indies	3,195	1,464					608	1,865	73,348	43,011	2,163	2,700	8,322	13,039	\$74,960
French East Indies													780	333	\$404
Hongkong	23,007	9,835	312	2,705	7,664	5,898	587	774	8,397	9,365	450	350	33,171	26,697	\$55,624
Japan					6	6									\$6
Russia in Asia							39	45							\$45
Siam															
Totals, Asia	55,550	\$40,125	516	\$3,601	14,174	\$11,175	4,590	\$6,625	107,473	\$81,187	3,423	\$3,439	52,607	\$48,990	\$195,142
Oceania:															
Australia	95,532	\$54,073	1,204	\$2,930	17,174	\$10,855			59,418	\$76,706	15,721	\$13,949	31,451	\$25,110	\$183,623
New Zealand	13,207	8,842	384	1,387			837	\$945	25,178	38,019			18,284	16,290	\$65,474
Other British Oceania									11	172					\$267
French Oceania	375	155							150	140					\$407
German Oceania									238	298					\$1,299
Philippine Islands	21,884	15,089	36	79	28,876	23,032	1,131	2,596	73,599	29,168	4,746	2,107	36,582	22,282	\$94,733
Totals, Oceania	130,998	\$78,403	1,624	\$4,396	46,050	\$33,887	1,968	\$3,541	158,684	\$144,499	20,517	\$16,076	86,363	\$63,953	\$344,755
Africa:															
British West Africa	106,122	\$50,361	227	\$794	1,555	\$1,315	456	\$526	126,062	\$79,577	1,934	\$1,105	34,761	20,449	\$154,127
British South Africa	615	257							122	165			32	18	\$440
French East Africa									31	565			36	42	\$42
Canary Islands															
Madagascar	708	682							64	92			70	85	\$859
Portuguese Africa															
Totals, Africa	107,450	\$51,300	227	\$794	1,555	\$1,315	456	\$526	126,580	\$80,399	1,934	\$1,105	34,926	\$20,648	\$156,087
Totals	675,333	\$399,812	72,481	\$277,096	121,418	\$97,102	45,795	\$60,441	1,338,160	\$1,268,845	91,816	\$57,868	568,836	\$477,817	\$2,638,981

(Compiled by the Bureau of Foreign and Domestic Commerce, Department of Commerce, Washington, D. C.)

EXPORTS OF INDIA RUBBER FROM PARA, MANAOS, AND IQUITOS DURING NOVEMBER, 1918.

EXPORTS OF INDIA RUBBER FROM THE PORT OF CALCUTTA.												
	NEW YORK.					EUROPE.					GRAND	
EXPORTERS.	Fine.	Medium.	Coarse.	Caucho.	TOTALS.	Fine.	Medium.	Coarse.	Caucho.	TOTALS.	TOTALS.	
Stowell & Co.,	35,531	6,096	13,146	23,634	78,407	44,169				44,169	122,576	
General Rubber Co. of Brazil,	344,075	70,625	203,067	651,905	1,200,672					46,092	697,897	
J. Marques,	118,603	17,170	291,210	75,740	502,723	40,043				40,043	542,766	
Saurez, Filho & Co.,	127,349			90,388	217,737	29,507				29,507	247,244	
Adelberg H. Alden, Limited,	119,314	9,322	18,150	146,806	243,592					44,044	190,510	
G. Pradelat & Co.,	40,800	12,158	20,413	27,368	100,739	35,260				35,260	135,999	
Bitar Irmãos,	15,435	386	14,050	95,369	125,270						125,270	

EXPORTERS.	NEW YORK.					EUROPE.					GRAND TOTALS.
	Fine.	Medium.	Coarse.	Caucho.	TOTALS.	Fine.	Medium.	Coarse.	Caucho.	TOTALS.	
Chamie & Co.	2,500	.....	.....	.....	2,500	.....	.....	.....	.....	.....	2,500
Sundries	45,050	.....	24,860	50,000	119,910	.....	.....	.....	.....	.....	119,910
Totals	871,677	79,170	468,324	606,666	2,035,837	261,215	.....	.....	.....	261,215	2,287,052
From Manaus	1,008,785	66,389	253,581	541,748	1,870,503	187,950	.....	.....	.....	187,950	2,060,763
From Iquitos	22,675	1,258	23,826	35,267	83,016	99,860	.....	.....	.....	99,860	182,865
Grand Totals	1,903,137	146,817	745,731	1,183,681	3,979,366	549,025	2,319	.....	.....	551,835	4,530,701

(Compiled by Stowell & Co., Para, Brazil.)

EXPORTS OF INDIA RUBBER FROM PARA AND MANAOS DURING SEPTEMBER, 1918.

EXPORTERS.	NEW YORK.					EUROPE.					GRAND TOTALS.
	Fine.	Medium.	Coarse.	Caucho.	TOTALS.	Fine.	Medium.	Coarse.	Caucho.	TOTALS.	
J. Marques	162,109	.....	193,124	63,241	418,474	63,347	.....	.....	.....	63,347	481,821
General Rubber Co. of Brazil	102,196	10,337	41,053	86,171	246,757	.....	.....	.....	.....	.....	246,757
Suarez, Filho & Co.	133,719	.....	.....	12,476	145,195	.....	.....	.....	.....	.....	145,195
G. Fradelizi & Co.	50,749	331	30,465	30,387	111,929	.....	.....	.....	.....	.....	111,929
Stowell & Co.	43,746	21,944	22,177	4,082	91,949	.....	.....	.....	.....	.....	91,949
Adelbert H. Alden, Limited	.....	.....	8,209	25,922	34,131	.....	.....	.....	.....	.....	34,131
Sundry shippers	22,783	.....	5,000	.....	27,783	.....	.....	.....	.....	.....	27,783
From Manaus	521,302	32,612	300,025	222,279	1,076,218	63,347	.....	.....	.....	63,347	1,139,565
From Para to South	330,750	112,594	149,098	255,696	848,138	.....	.....	.....	.....	.....	848,138
Totals	852,052	145,206	449,123	477,975	1,924,356	.....	.....	.....	.....	.....	1,987,701
From Para to South	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	20,604
From Para to South	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	49,420

EXPORTS OF INDIA RUBBER FROM PARA AND MANAOS DURING OCTOBER, 1918.

EXPORTERS.	NEW YORK.					EUROPE.					GRAND TOTALS.
	Fine.	Medium.	Coarse.	Caucho.	TOTALS.	Fine.	Medium.	Coarse.	Caucho.	TOTALS.	
Suarez, Filho & Co.	.....	.....	60,315	.....	60,315	38,487	.....	.....	.....	38,487	98,802
J. Marques	25,330	.....	.....	.....	25,330	39,140	.....	.....	.....	39,140	64,470
General Rubber Co. of Brazil	.....	.....	.....	.....	.....	61,911	.....	.....	.....	61,911	61,911
Stowell & Co.	.....	.....	.....	.....	.....	50,000	.....	.....	.....	50,000	50,000
Adelbert H. Alden, Limited	.....	.....	.....	.....	.....	35,123	.....	.....	.....	35,123	35,123
G. Fradelizi & Co.	.....	.....	.....	.....	.....	20,131	.....	.....	.....	20,131	20,131
Sundry shippers	1,360	.....	24,331	42,573	68,264	22,294	.....	.....	.....	22,294	90,558
From Manaus	26,690	.....	84,646	42,573	153,909	267,086	.....	.....	.....	267,086	420,955
From Para to South	.....	.....	.....	.....	.....	185,297	2,720	8,269	66,654	262,940	262,940
Totals	26,690	.....	84,646	42,573	153,909	452,383	2,720	8,269	66,654	530,026	683,935

(Compiled by Adelbert H. Alden, Limited, Para, Brazil.)

EXPORTS OF INDIA RUBBER FROM MANAOS DURING SEPTEMBER, 1918.

EXPORTERS.	NEW YORK.					EUROPE.					GRAND TOTALS.
	Fine.	Medium.	Coarse.	Caucho.	TOTALS.	Fine.	Medium.	Coarse.	Caucho.	TOTALS.	
Stowell & Co.	155,563	32,207	17,092	117,430	322,311	107,627	.....	.....	.....	107,627	427,481
J. A. Mendes & Co.	47,586	38,500	133,500	100,000	319,586	30,940	.....	.....	.....	30,940	350,525
Higson & Fall	.....	.....	.....	.....	.....	60,407	.....	7,154	66,654	73,808	73,808
Tancredo, Porto & Co.	.....	.....	.....	.....	.....	50,000	566	98	.....	51,071	61,071
General Rubber Co. of Brazil	.....	.....	.....	.....	.....	24,080	3,967	193	.....	28,340	40,219
Moras, Carneiro & Co.	.....	.....	.....	11,979	11,979	20,060	.....	.....	.....	20,060	40,060
Adelbert H. Alden, Limited	1,315	.....	1,107	17,523	20,000	24,140	.....	1,115	.....	25,555	30,867
J. G. Araujo	4,060	.....	420	1,132	5,612	12,094	.....	.....	.....	12,094	12,094
Stowell & Sons	.....	.....	.....	.....	.....	13,600	6,400	.....	.....	20,000	20,000
Amorim Irmãos	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Totals, Manaus	208,550	70,758	152,119	248,064	679,491	340,488	10,933	8,560	66,654	426,635	1,106,126
In transit, Iquitos	9,948	12,138	2,800	11,084	35,970	.....	.....	.....	.....	.....	35,970
Totals	218,498	82,896	154,919	259,148	715,461	340,488	10,933	8,560	66,654	426,635	1,142,096

EXPORTS OF INDIA RUBBER FROM MANAOS DURING OCTOBER, 1918.

EXPORTERS.	NEW YORK.					EUROPE.					GRAND TOTALS.
	Fine.	Medium.	Coarse.	Caucho.	TOTALS.	Fine.	Medium.	Coarse.	Caucho.	TOTALS.	
J. A. Mendes & Co.	23,554	9,811	41,483	151,574	418,982	.....	.....	.....	.....	.....	418,982
General Rubber Co. of Brazil	191,891	95,910	39,067	55,349	376,247	.....	.....	.....	.....	.....	376,247
Tancredo, Porto & Co.	38,397	35,443	22,817	112,754	209,411	.....	.....	.....	.....	.....	209,411
Stowell & Co.	5,344	31,661	.....	.....	37,005	.....	.....	.....	.....	.....	37,005
J. G. Araujo	4,880	.....	3,992	10,643	19,515	.....	.....	.....	.....	.....	19,515
Moras, Carneiro & Co.	.....	5,000	.....	13,021	18,021	.....	.....	.....	.....	.....	18,021
Vianna & Lyra	170	160	270	150	750	.....	.....	.....	.....	.....	750
Totals, Manaus	523,936	177,985	103,419	344,291	1,149,631	.....	.....	.....	.....	.....	1,149,631
In transit, Iquitos	11,330	3,362	5,808	10,562	31,062	.....	.....	.....	.....	.....	31,062
Totals	535,266	181,347	109,227	354,853	1,180,693	.....	.....	.....	.....	.....	1,180,693

EXPORTS OF INDIA RUBBER FROM MANAOS DURING NOVEMBER, 1918.

EXPORTERS.	NEW YORK.					EUROPE.					GRAND TOTALS.
	Fine.	Medium.	Coarse.	Caucho.	TOTALS.	Fine.	Medium.	Coarse.	Caucho.	TOTALS.	
J. A. Mendes & Co.	132,730	8,670	53,000	40,160	234,560	31,170	.....	.....	.....	31,170	265,730
General Rubber Co. of Brazil	147,046	6,776	10,931	21,000	185,753	.....	.....	.....	.....	.....	185,753
Adelbert H. Alden, Limited	35,020	3,902	270	40,800	79,992	30,600	.....	.....	.....	30,600	110,592
Stowell & Co.	17,995	24,214	7,703	.....	49,912	.....	.....	.....	.....	.....	49,912
Tancredo, Porto & Co.	.....	.....	.....	.....	.....	30,770	.....	.....	.....	30,770	30,770
Amorim Irmãos	.....	.....	.....	.....	.....	20,400	.....	.....	.....	20,400	20,400
Totals	332,791	43,562	71,904	101,960	550,217	162,940	.....	.....	.....	162,940	713,157
In transit, Iquitos	.....	.....	.....	.....	.....	99,860	.....	.....	.....	99,860	99,860
Grand totals	332,791	43,562	71,904	101,960	550,217	262,800	.....	.....	.....	262,800	813,017

(Compiled by Stowell & Co., Manaus, Brazil.)

OFFICIAL INDIA RUBBER STATISTICS FOR THE UNITED STATES.

IMPORTS OF CRUDE AND MANUFACTURED RUBBER.

	October.		1918	
	Pounds.	Value.	Pounds.	Value.
UNMANUFACTURED—				
India rubber:				
From—				
Portugal.....	49,860	\$30,013	.....	.....
United Kingdom.....	6,926	35,206	.....	.....
Canada.....	2,225,940	1,241,771	.....	.....
Central America.....	45,900	36,766	.....	.....
Mexico.....	57,145	24,290	.....	.....
Brazil.....	2,866,072	23,546	.....	.....
Peru.....	850,875	2,253,060	.....	.....
Other South America.....	697,958	278,134	.....	.....
British East Indies.....	93,100	44,442	.....	.....
Dutch East Indies.....	21,663,540	12,762,499	.....	.....
Other countries.....	5,572,390	3,208,450	.....	.....
Totals.....	98,194	59,284	.....	.....
MANUFACTURED—				
India rubber and gutta percha.....	33,265,222	\$18,585,266	15,221,711	\$5,936,466
Latex.....	309,284	\$188,646	99,718	\$46,430
Gutta percha.....	1,310,067	98,839	1,272	1,900
Latex (Pontianak).....	2,293,059	113,639	.....	.....
Gutta percha.....	79,992	21,172	.....	.....
Totals.....	2,995,402	\$387,356	645,326	\$145,489
Rubber scrap.....	1,064,817	72,352	520,784	28,767
Totals, unmanufactured.....	4,060,219	\$459,708	1,166,110	\$174,256
MANUFACTURED—				
India rubber and gutta percha.....	.....	\$47,656	.....	\$24,462
India rubber substitutes.....	.....	7,388	.....	6,828

EXPORTS OF DOMESTIC MERCHANDISE.

	1917	1918
Automobile tires.....	\$1,398,169	794,689
All other tires.....	95,189	41,371
Scrap and odd.....	125,488	336,961
Belting, hose and packing.....	369,250	238,325
Rubber boots.....	343,962	833,888
Rubber shoes.....	306,661	928,245
Druggists' rubber sundries.....	1,637,799	254,427
Other rubber manufactures.....	66,092	49,297
Totals, manufactured.....	\$2,614,866	\$7,077,079
Totals, manufactured.....	\$8,863,717	\$2,611,572
Domestic tops.....	15,749	13,313

EXPORTS OF FOREIGN MERCHANDISE.

	1917	1918
UNMANUFACTURED—		
India rubber.....	412,869	\$1,782
Gutta percha.....	21,105	3,400
Totals, unmanufactured.....	433,974	\$255,182
MANUFACTURED—		
India rubber.....	.....	\$419
Gutta percha.....	.....	48
Substitutes, elastic, etc.....	.....	23
Totals, manufactured.....	.....	\$490
Totals, manufactured.....	.....	\$648

EXPORTS OF RUBBER GOODS TO NON-CONTIGUOUS TERRITORIES OF THE UNITED STATES.

	October.		1918	
	Pounds.	Value.	Pounds.	Value.
MANUFACTURED—				
To—				
Mexico.....
Belting, hose and packing.....
Boots and shoes.....
Other rubber goods.....
Totals.....
Hawaii.....
Belting, hose and packing.....
Automobile tires.....
Other tires.....
Other rubber goods.....
Totals.....
Philippine Islands.....
Belting, hose and packing.....
Boots and shoes.....
Other tires.....
Other rubber goods.....
Totals.....
Porto Rico.....
Belting, hose and packing.....
Automobile tires.....
Other tires.....
Other rubber goods.....
Totals.....

*Details of exports of domestic merchandise by countries during October, 1918, were given in THE INDIA RUBBER WORLD, January 1, 1919, page 284.

UNITED STATES CRUDE RUBBER IMPORTS FOR 1918 (BY MONTHS).

	1918	1917	1916	1915	1914	1913	1912	1911	1910	1909	1908	1907	1906	1905	1904	1903	1902	1901	1900
January.....	15,201	710	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
February.....	9,715	3,108	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
March.....	14,999	1,699	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
April.....	12,703	481	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
May.....	13,783	2,019	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
June.....	21,787	2,146	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
July.....	13,657	2,260	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
August.....	8,473	1,744	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
September.....	4,613	153	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
October.....	1,958	190	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
November.....	3,951	510	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
December.....	7,786	3,298	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Totals.....	133,167	20,086	730	762	1,329	146	156,220	172,942	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

(From figures compiled by The Rubber Association of America, Inc.)

UNITED KINGDOM RUBBER STATISTICS.

IMPORTS.

	1917	1918
Crude rubber:		
From—		
Dutch East Indies.....	1,432,500	\$356,600
French West Africa.....	68,500	6,570
Gold Coast.....	194,100	11,926
Other countries in Africa.....	1,186,400	123,344
Brazil.....	4,097,700	576,672
British India.....	160,100	20,102
Strait Settlements and dependencies, including Labuan.....	1,937,600	271,605
Malaya States.....	1,333,800	165,188
Ceylon and dependencies.....	2,082,000	260,395
Other countries.....	347,700	51,173
Totals.....	13,099,000	\$8,705,100
Waste and reclaimed.....	166,000	1,206
Totals.....	13,265,000	\$1,689,883
Gutta percha.....	1,053,000	164,678

	1917	1918
MANUFACTURED—		
Boots and shoes—dozen pairs.....	6,947	\$22,891
Waterproof clothing.....	.....	2,612
Carriage tires and tubes.....	.....	6,561
Automobile tires and tubes.....	.....	5,528
Motorcycle tires and tubes.....	.....	49
Bicycle tires and tubes.....	.....	1,107
Insulated wire.....	.....	786
Totals.....	.....	\$176,062

..... £116,540

EXPORTS.

	1917	1918
UNMANUFACTURED—		
Waste and reclaimed rubber.....	1,230,600	\$22,629
MANUFACTURED—		
Waterproof clothing.....	.....	\$46,981
Boots and shoes—dozen pairs.....	14,387	16,197
Insulated wire.....	.....	4,797
Submarine cables.....	.....	44,664
Carriage tires and tubes.....	.....	11,030
Automobile tires and tubes.....	.....	83,083
Motorcycle tires and tubes.....	.....	11,660
Bicycle tires and tubes.....	.....	13,736
Other manufactures of india rubber.....	.....	148,922
Totals.....	.....	\$380,950

..... £333,074

EXPORTS—FOREIGN AND COLONIAL.

	1917	1918
UNMANUFACTURED—		
Crude rubber:		
To—		
Russia.....	1,076,600	\$127,208
France.....	2,246,300	292,182
United States.....	650,900	73,305
Other countries.....	86,084	526,300
Totals.....	4,310,800	\$478,639
Waste and reclaimed.....	5,600	352
Totals.....	4,316,400	\$478,991
Gutta percha.....	16,500	3,626
MANUFACTURED—		
Boots and shoes—dozen pairs.....	35	£118
Waterproof clothing.....	.....	12
Insulated wire.....	.....	100
Carriage tires and tubes.....	.....	12,990
Automobile tires and tubes.....	.....	71
Motorcycle tires and tubes.....	.....	8
Bicycle tires and tubes.....	.....	70
Totals.....	.....	£13,305

..... £654

LONDON AND LIVERPOOL RUBBER STATISTICS.

The import and export figures by countries usually published in this table are withheld by the British Government.

IMPORTS.				
UNMANUFACTURED:	November.			
	1917.		1918.	
Crude rubber:	Pounds.	£.	Pounds.	£.
At—				
London	3,531,100	437,931	4,883	574,572
Liverpool	2,820,000	1,066,309	2,733,200	334,111
Totals	11,401,100	1,504,239	7,615,200	908,683
Waste and reclaimed rubber:				
At—				
London	8,500	100	9,800	401
Liverpool	147,500	916	—	—
Totals	156,000	1,115	9,800	401
EXPORTS.				
Waste and reclaimed rubber:				
From—				
London	688,000	14,969	343,400	14,053
Liverpool	44,500	430	57,100	1,173
Totals	733,400	14,719	400,500	15,228
REEXPORTS.				
Crude rubber:				
From—				
London	2,532,000	331,888	1,430,100	160,089
Liverpool	1,883,900	233,673	469,000	54,358
Totals	4,415,900	565,561	1,899,100	214,447
Waste and reclaimed rubber:				
From—				
London	5,000	552	22,400	900

RUBBER STATISTICS FOR ITALY.

IMPORTS OF CRUDE AND MANUFACTURED RUBBER.

UNMANUFACTURED—	1917.		1918.	
	Quantals.	Lire.	Quantals.	Lire.
India rubber and gutta percha—raw and reclaimed:				
From—				
Great Britain	7,233	—	4,279	—
India and Ceylon	6,419	—	5,217	—
Straits Settlements	1,630	—	17,949	—
French Congo	936	—	4,214	—
Belgian Congo	1,065	—	132	—
Brazil	15,667	—	8,893	—
Other countries	848	—	1,273	—
Totals	33,800	37,180,000	41,950	46,134,900
Rubber scrap	6,670	728,000	880	106,680
Manufactured:				
India rubber and gutta percha—threads:				
From—				
Great Britain	77	—	97	—
United States	168	—	271	—
Other countries	8	—	12	—
Totals	250	550,000	380	836,000
India rubber and gutta percha—sheets:				
From—				
Great Britain	1	11,600	1	2,300
Elastic fabric	1	700	—	—
Other kinds, including hard rubber	64	76,800	61	75,300
India rubber and gutta percha—tubes:				
From—				
From cut sheets	1	700	1	8,600
Elastic fabric	46	441,600	16	67,600
Other forms	8	6,000	1	1,100
Belting	243	267,400	588	393,800
Rubber-coated fabrics, packages	136	306,800	117	151,100
Other forms	—	—	—	—
For carding combs	—	—	—	—
From—				
Great Britain	80	—	—	—
United States	99	—	—	—
Other countries	16	—	—	—
Totals	195	2,675,000	3	4,500
Boots and shoes—pairs:				
From—				
France	—	60,300	—	19,800
United States	—	12,078	—	1,300
Other countries	162	—	419	—
Totals	162	72,378	419	21,100
Elastic webbing	18,800	1,300	23,368	280,416
From—				
France	137	—	74	—
Great Britain	40	—	99	—
Other countries	38	—	11	—
Totals	185	160,400	111	2,400
Clothing and articles for travel	2	31,000	13	45,000

MANUFACTURED—	1917.		1918.	
	Quantals.	Lire.	Quantals.	Lire.
Manufactures of india rubber and gutta percha—n. c. s.:				
From cut sheets	43	111,800	29	49,400
Elastic fabrics:				
From—				
France	241	—	62	—
Great Britain	635	—	766	—
Other countries	50	—	36	—
Totals	926	1,138,200	864	1,036,800
Tires and tubes:				
From—				
France	2,377	—	1,448	—
Great Britain	1,331	—	443	—
Other countries	90	—	—	—
Totals	3,798	6,836,400	1,891	3,493,800
Other rubber manufactures:				
From—				
France	503	—	1,294	—
Great Britain	943	—	1,019	—
United States	1,066	—	126	—
Other countries	4	—	2	—
Totals	3,516	3,021,600	2,441	2,929,200
Total imports	—	51,109,060	—	55,762,896

EXPORTS OF CRUDE AND MANUFACTURED RUBBER.

UNMANUFACTURED—	1917.		1918.	
	Quantals.	Lire.	Quantals.	Lire.
India rubber and gutta percha—raw and reclaimed:				
To—				
Spain	330	—	801	—
United States	1,977	—	115	—
Totals	2,307	805,700	916	330,600
MANUFACTURED—				
India rubber and gutta percha—threads:				
To—				
France	61	—	18	—
Great Britain	32	—	—	—
Spain	27	—	—	—
Switzerland	16	—	—	—
Argentina	16	—	—	—
Other countries	7	—	—	—
Totals	159	18	349,800	39,600
India rubber and gutta percha—sheets:				
To—				
Cut sheets	5	—	7	—
Elastic fabrics	14	—	91	—
Insulated wire	1	—	—	—
Other forms, including hard rubber	64	64,000	20	20,000
India rubber and gutta percha—tubes:				
To—				
From cut sheets	1	—	3	—
Elastic fabric	130	—	86	—
Other forms	212	201,400	65	81,750
Belting	11	11,000	36	36,000
Rubber-coated fabrics, packages	136	163,200	38	45,000
Elastic webbing:				
To—				
France	8	—	6	—
Greece	29	—	98	—
Spain	49	—	9	—
Switzerland	276	—	20	—
Egypt	48	—	39	—
United States	185	—	73	—
Brazil	201	—	186	—
Chile	44	—	34	—
Cuba	44	—	38	—
Other countries	98	—	—	—
Totals	1,150	2,443,800	544	1,033,800
Clothing and articles for travel	2	72,500	3	8,400
Manufactures of rubber and gutta percha—n. c. s.:				
From cut sheets:				
To—				
Great Britain	1	—	39	—
Argentina	18	—	—	—
France	1	—	—	—
Other countries	1	—	4	—
Totals	30	66,300	45	99,000
Elastic fabric	80	97,400	66	72,600
Tires and tubes:				
To—				
France	3,000	—	2,249	—
Great Britain	6,500	—	1,108	—
Spain	12	—	81	—
Switzerland	1	—	—	—
India and Ceylon	1,466	—	—	—
United East Indies	350	—	—	—
Straits Settlements	1,478	—	—	—
Australia	—	—	—	—
Argentina	804	—	24	—
Brazil	1,000	—	434	—
Other countries	794	—	244	—
Totals	14,918	19,393,400	4,561	5,229,800

Seven Months Ended July 31.

MANUFACTURER Other manufacturers: To—	1917.		1918.	
	Quintals.	Lira.	Quintals.	Lira.
France.....	165	.....	91	.....
Great Britain.....	166	.....	87	.....
Spain.....	11	.....	7	.....
Switzerland.....	116	.....	109	.....
Egypt.....	11	.....	21	.....
Argentina.....	329	.....	31	.....
Brazil.....	135	.....	17	.....
Rumay.....	61	.....	8	.....
Other countries.....	110	.....	71	.....
Totals.....	1,104	1,104,000	442	442,000
Total exports.....		24,699,100		8,214,650

1 A quintal = 220.46 pounds.

2 A lira = \$0.193.

RUBBER STATISTICS FOR THE DOMINION OF CANADA.

The import and export figures by countries usually published in this table are withheld by the Canadian Government.

IMPORTS OF CRUDE AND MANUFACTURED RUBBER.

	1917.		1918.	
	Pounds.	Value.	Pounds.	Value.
UNMANUFACTURED—free:				
Rubber and gutta percha, crude caoutchouc or india rubber.....	1,242,817	\$707,345	1,777,321	\$568,062
Rubber, recovered.....	424,204	69,602	301,204	52,140
Hard rubber, in sheets and rods.....	1,649	1,578	2,074	1,479
Rubber substitute.....	38,456	3,669	76,303	9,232
Rubber, powdered, and rubber or gutta percha, waste.....	146,448	7,971	164,654	27,221
Rubber thread, not covered.....	2,459	3,574	6,223	9,225
Totals.....	1,856,035	\$793,559	2,327,779	\$667,349
Chicle.....	104,122	42,047	38,108	22,989
MANUFACTURED—dutiable:				
Boots and shoes.....		47,027		9,966
Belted.....		10,871		10,997
Waterproof clothing.....		29,459		6,739
Hose, lined with rubber.....		8,874		9,806
Mats and matting.....		68		83
Trucking.....		7,607		1,118
Tires of rubber for vehicles.....		161,826		54,082
Rubber cement and all manufactures of india rubber and gutta percha—n. o. p.....		84,129		108,745
Hard rubber, unfinished, in tubes for fountain pens.....		1,228		1,067
Webbing, over one inch wide.....		12,061		27,726
Totals.....		\$372,220		\$241,729

EXPORTS OF DOMESTIC AND FOREIGN RUBBER GOODS.

	1917.		1918.	
	Produce of Canada.	Reexports of Foreign Goods.	Produce of Canada.	Reexports of Foreign Goods.
Hose.....	\$18,067	Value.	\$13,368	Value.
Boots and shoes.....	69,736	.....	195,146	.....
Clothing.....	911	.....	1,889	.....
Tires.....	109,299	3,325	278,254	3,701
Waste.....	14,996	.....	7,764	.....
All other—n. o. p.....	7,493	3,690	5,409	159,564
Totals.....	\$220,522	\$75,015	\$500,850	\$162,265
Chicle.....	30,485	23,011	21,095	25,314

THE MARKET FOR RUBBER SCRAP.

NEW YORK.

THERE was quite a little business during the month of January although the volume of transactions decreased toward the end of the month. A greater volume of business in tires had been expected. Reclaimers have not been receiving any large orders, but they are looking forward with confidence to a return to pre-war conditions that came to such an abrupt end when the government started its war-time regulations and restrictions. We look forward to considerable exports of reclaimers and scrap before long, and as the number of motor trucks in use is sure to increase phenomenally, the scrap market will profit in proportion to the new demand.

BOOTS AND SHOES—More business continues to be done in boots and shoes than in other lines. A month ago prices ranged from

8½ cents to 9 cents. They are now quoted at 8¾ cents, although many carloads have been sold at 9 cents.

INNER TUBES—There has been little demand, practically no transactions being recorded, change in price fractional.

MECHANICALS—No inquiries at all, situation as stagnant as it could be, prices unchanged.

TIRES—Tire sales have been disappointing. Quotations for mixed remain at 5 cents, same as a month ago. Either no change or fractional change only in other prices.

NEW YORK QUOTATIONS FOR CARLOAD LOTS DELIVERED.

JANUARY 25, 1919.

Prices subject to change without notice.

BOOTS AND SHOES.

Arctic tops.....	lb.	\$9.11½
Boots and shoes.....	lb.	08.4½
Trimmed arctic.....	lb.	07.½
Untrimmed arctic.....	lb.	06.1½

HARD RUBBER.

Battery jars, black compound.....	lb.	* 92
No. 1, bright fracture.....	lb.	3

INNER TUBES.

No. 1, old packing.....	lb.	22
No. 2.....	lb.	11.4½
Red.....	lb.	11.1½

MECHANICALS.

Black scrap, mixed, No. 1.....	lb.	04.3½
Car springs.....	lb.	03.5½
Heels.....	lb.	03.3½
Horsehoe pads.....	lb.	04.5½
Hose, air-brake.....	lb.	05.1½
fire, cotton lined.....	lb.	02.5½
garden.....	lb.	01.3½
Insulated wire stripping, free from fiber.....	lb.	03.7½
Matting.....	lb.	* 01.5½
Packing.....	lb.	* 01.5½
Red scrap, No. 1.....	lb.	09.5½
No. 2.....	lb.	07
White scrap, No. 1.....	lb.	01.2½
No. 2.....	lb.	09.1½

TIRES.

PNEUMATIC:

Auto peelings, No. 1.....	lb.	10
No. 2.....	lb.	06.5½
Bicycle.....	lb.	04.1½
Standard white auto.....	lb.	05.5½
Mixed auto.....	lb.	05
Striped, unguaranteed.....	lb.	03.5½
White, G. & G., M. & W. and U. S.....	lb.	05.5½

SOLID:

Carriage.....	lb.	04.5½
Iron.....	lb.	01.5½
Truck.....	lb.	04.5½

*Nominal

THE MARKET FOR COTTON AND OTHER FABRICS.

NEW YORK.

A DECLINING market is one where caution is a virtue. Cotton is now over \$80 a bale below the prices of the early part of last September, and everybody is convinced that the tobogganing is far from finished. Labor troubles are spreading in all the textile centers of the United States and Great Britain. Southern stocks are very large and Senators from the cotton-growing states have cabled to President Wilson, asking him to remove all embargoes on the exportation of cotton to non-enemy countries, as well as to permit exports to Germany and Austria.

EGYPTIAN COTTON.—On January 21 the War Trade Board ended all restrictions on the importations of Egyptian cotton. Import licenses are now issued without requiring the endorsement of the bill of lading to the Textile Alliance, Inc. This is fortunate, as Egyptian cotton imports amounted to only 80,000 bales in 1918, whereas the average annual pre-war importations were 200,000 bales.

SEA ISLAND COTTON.—Information from South Carolina, Georgia, and Florida indicates that the Sea Island cotton crop will be negligible the coming season. The amount of Sea Island ginned this season up to January 16 was 41,080 bales as against 88,869 bales last year during the corresponding period, and 113,359 bales the previous year. The government estimate of

the area planted to Sea Island during the past season is 276,000 acres, as against 316,000 acres the previous season, and it figures on 50,000 acres for the coming season.

DUCKS, DRILLS, AND OSNABURGS.—Demand is fairly strong and stocks are low. Mills have not been able to fill their civilian contracts so far. Prices, however, have fallen. Drills, 38-inch 200-yard, were 30½ cents on December 26; they were 27½ cents on January 25. Enameling duck, 38-inch 200 yard, was 31 cents on December 26; it was 29 cents on January 25.

RAINCOAT FABRICS.—Cotton cloth purchases by the raincoat trade have been very light, due to the anticipation of lower prices. The market has been steadily declining. Bombazine, 64 by 60, water-repellant, was 17 cents on December 26; it was 14½ cents on January 25. Plaids, 60 by 48, were 16½ cents on December 26; they were 13½ on January 25. Surface prints, 60 by 48, were 16½ cents on December 26; they were 14 cents on January 25.

TIRE FABRICS.—Prices have been going off for the last two or three months, and consequently buyers are hesitating. While the large consumers have stocks, the smaller mills have none. The former, in certain cases, have bought in order to support the market, realizing that a continued depression will eventually result in a disadvantageous situation.

NEW YORK QUOTATIONS.

JANUARY 25, 1919.

Prices subject to change without notice.

AIRPLANE AND BALLOON FABRICS:

Wamsutta, S. A. I. L. No. 1, 40-inch.....	yard	.60	@
No. 4, 38½-inch.....	yard	.50	@

ASBESTOS CLOTH:

Brake lining, 2½ lbs. sq. yd., brass or copper insertion.....	lb.	*.85	@
2½ lbs. sq. yd., brass or copper insertion.....	lb.	*.90	@

BURLAPS:

32—7-ounce.....	100 yards	8.00	@
32—8-ounce.....	100 yards	8.50	@
40—7½-ounce.....	100 yards	8.80	@
40—8-ounce.....	100 yards	9.00	@
40—10-ounce.....	100 yards	13.75	@
40—10½-ounce.....	100 yards	14.00	@
45—7½-ounce.....	100 yards	10.80	@
45—8-ounce.....	100 yards	11.00	@
45—9½-ounce.....	100 yards	16.50	@
48—10-ounce.....	100 yards	17.00	@

DRILLS:

38-inch 2.00-yard.....	yard	.27½	@
40-inch 2.47-yard.....	yard	.27¾	@
52-inch 1.90-yard.....	yard	.31½	@
52-inch 1.95-yard.....	yard	.30¾	@
60-inch 1.52-yard.....	yard	.38½	@

DUCK:

CARRIAGE CLOTH:

38-inch 2.00-yard enameling duck.....	yard	.29	@
38-inch 1.74-yard.....	yard	.33¾	@
72-inch 16.66-ounce.....	yard	.64½	@
72-inch 17.21-ounce.....	yard	.66¾	@

MECHANICAL:

Hose.....	100 yards	.63½	@
40-inch, 10-ounce.....	100 yards	.64¾	@
Belting.....	100 yards	.63¾	@

HOLLANDS, 40-INCH:

Acme.....	yard	*.30	@
Endurance.....	yard	*.33	@
Penn.....	yard	*.34	@

OSNABURGS:

40-inch 2.35-yard.....	yard	.25½	@
40-inch 2.48-yard.....	yard	.24½	@
37½-inch 2.42-yard.....	yard	.24¼	@

RAINCOAT FABRICS:

COTTON:

Bombazine 64 x 60 water-repellent.....	yard	.14½	@
60 x 48 not water-repellent.....	yard	.12¾	@
Cashmeres, cotton and wool, 36-inch, tan.....	yard	.85	@
Oxford—blue and black.....	yard	.87½	@
Twills 64 x 72.....	yard	.30	@
64 x 102.....	yard	.35	@
Twill, mercerized, 36-inch, tan and olive.....	yard	.29	@
blue and black.....	yard	.31	@
Tweed.....	yard	.55	@

Tweed, printed.....	yard	.18	@
Plaids 60 x 48.....	yard	.13½	@
56 x 44.....	yard	.13	@
Repp.....	yard	.37½	@
Surface prints 60 x 48.....	yard	.14	@
64 x 60.....	yard	.15½	@

IMPORTED WOOLEN FABRICS SPECIALLY PREPARED FOR RUBBERIZING

—PLAIN AND FANCIES:

63-inch, 3¾ to 7½ ounces.....	yard	1.15	@
36-inch, 2¾ to 5 ounces.....	yard	.80	@

IMPORTED PLAID LINING (UNION AND COTTON):

63-inch, 2 to 4 ounces.....	yard	.90	@
36-inch, 2 to 4 ounces.....	yard	.52½	@

DOMESTIC WORSTED FABRICS:

36-inch, 4¾ to 8 ounces.....	yard	.50	@
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DOMESTIC WOVEN PLAID LININGS (COTTON):

36-inch, 3¾ to 5 ounces.....	yard	.20	@
------------------------------	------	-----	---

SHEETINGS:

JACKET:

Delaware.....	yard	*.30	@
Saucykill.....	yard	*.32	@

SILKS:

Canton, 38-inch.....	yard	.34½	@
Schappe, 36-inch.....	yard	.52½	@

STOCKINETTES:

COTTON, 52-INCH:

D—14-ounce.....	yard	*.85	@
E—11½-ounce.....	yard	*.60	@
F—14-ounce.....	yard	*.85	@
G—8-ounce.....	yard	*.75	@
H—11-ounce.....	yard	*.70	@
I—9-ounce.....	yard	*.50	@
Knitaback.....	yard	*1.75	@

*Nominal.

TIRE FABRICS

JENCKES SPINNING COMPANY

PAWTUCKET RHODE ISLAND

WOOL, 52-INCH:

A—14-ounce	yard	\$1.75	@
B—14-ounce		\$2.25	@
C—14-ounce		\$2.50	@

TIRE FABRICS:

17½-ounce Sea Island, combed	square yard	1.45	@	1.55
17½-ounce Egyptian, combed		1.20	@	1.30
17½-ounce Egyptian, carded		1.10	@	1.25
17½-ounce Peellers, combed		1.00	@	1.15
17½-ounce Peellers, carded		1.00	@	1.05

*Nominal.

SEA ISLAND COTTON CROP MOVEMENT.

FROM AUGUST 1, 1918, TO DECEMBER 27, 1918.

	Receipts.	
	1918-19.	1917-18.
Stock on hand, August 1, 1918		
Savannah, 15,247; Charleston, 517	15,764	1,044
Received at Savannah (gross)	6,096	20,670
Received at Charleston	4,909	4,704
Received at Jacksonville	4,156	17,579
Received at Brunswick		
Received at Norfolk		
Totals	30,925	43,997
Less exports	15,614	27,028
Stock December 27, 1918—		
Savannah, 10,679; Charleston, 4,632	15,311	16,960
Crop in sight at all ports to date	14,661	42,887

EXPORTS.

	To			Total.
	Great Britain.	Continent.	North Mills.	
From				
Atlantide	144	9,792	728	10,664
Charleston		794		794
Jacksonville		4,156		4,156
Brunswick				
Norfolk				
Totals	144	14,742	728	15,614
1917-18	28	142	25,188	25,958
	1110	1142	10,446	22,702

1 Increase.

2 Decrease.

(Considered by John Malloch & Co., Savannah, Georgia.)

EGYPTIAN COTTON CROP MOVEMENT.

FROM AUGUST 1, 1918, TO NOVEMBER 27, 1918.

	1918-1919.			1916-1917.
	1918-1919.	1917-18.	1916-1917.	
Totals	78,113	71,741	79,304	
Liverpool	38,734	20,738	40,823	
Manchester	5,537			
Other United Kingdom ports				
Total shipments to Great Britain	122,884	92,479	120,130	
To				
France	10,140	10,842	11,793	13,263
Spain	17,270			
Italy	3,110	20,386	12,272	15,114
Switzerland				
Norway				
Sweden				
Russia	3,213			9,936
Greece				
Total shipments to Continent	34,441	24,065	38,376	
To				
United States	11,792	13,530	29,974	
India	5,411	9,914	3,030	
Japan	5,411			
Total shipments to all parts	174,028	139,988	191,490	
Total	6,315,841	5,126,199		

1 A cotton equals 98 pounds.

2 A cotton equals 98 pounds.

THE MARKET FOR CHEMICALS AND COMPOUNDING INGREDIENTS.

NEW YORK.

REPORTS from all over the United States indicate that even large manufacturers will be buying to meet current needs for some months to come. The market readjustment from war to peace basis is progressing without involving a general lowering of prices. Manufacturers realize that no radical decline in prices of minerals and chemicals is forthcoming and also are feeling the necessity of buying in anticipation of new business on a pre-war schedule of operation.

There is promise of liberal export trading in lithopone, barytes,

aluminum flake, and zinc oxide as soon as freight space is available and considerable development in trade revival is anticipated during the next three months.

The market for all rubber compounding ingredients has, in general, been very inactive during the last month, although there is evidence of spring activity in certain lines.

ANILINE.—This material is in rather light demand at present cut prices from 27 to 30 cents per pound.

BARYTES.—Shows no change.

BENZOL.—The market is dull at 24 to 28 cents per pound.

CARBON TETRACHLORIDE.—Prices during the past month ranged from 15 to 17 cents with no important demand.

LITHARGE has dropped in price one cent per pound but shows little activity.

WHITE LEAD.—There has been little demand for dry white lead. Manufacturers announced a drop of one cent per pound effective for the period from January 15 to June 30.

WHITING STOCKS are low as usual.

ZINC OXIDE and LITHOPONE are in fair demand without much change in market conditions, although there is promise of active business to come in both materials.

NEW YORK QUOTATIONS.

JANUARY 25, 1919.

Prices subject to change without notice.

ACCELERATORS. ORGANIC.

Accelerator N. C.	lb.	\$50	@
Accelerator No. 1	lb.	.60	@
Accelerene	lb.	\$2.62	@
Accelamal	lb.	.65	@
Aldehyde ammonia crystals	lb.	.94	@
Aniline oil	lb.	.27	@
Excimerex	lb.	.35	@
Hexamine tetramine (powdered)	lb.	1.15	@
Paraphenylenediamine	lb.	3.50	@
Tenolite	lb.	.60	@
Thioresbaniline	lb.	.50	@
Velocite	lb.	.50	@

ACCELERATORS. INORGANIC.

Lead, dry red	lb.	.10 1/4	@
sublimed blue	lb.	.08 1/4	@
sublimed white	lb.	.08 1/4	@
white, basic carbonate	lb.	.09	@
Lead nitrate	lb.	.27	@
Lime, flour	lb.	.01 1/4	@
Litharge, domestic	lb.	.14	@
English	lb.	.14	@
sublimed	lb.	.11	@
Magnesium, carbonate	lb.	.12	@
Diatomite	lb.	.03	@
calcined heavy (Thistle)	lb.	.11	@
white, basic carbonate	lb.	.35	@
Magnesium oxide, light (Manhattan)	lb.	.30	@
medium heavy	lb.	.10	@
Magnesite, calcined, powdered	ton	50.00	@
ACIDS.			
Acetic, 28 per cent (bbls.)	cut.	5.16	@
glacial, 99 per cent (carbonyl)	cut.	29.04	@
Cresylic, 97-99 per cent, straw color	gal.	1.07	@
95 per cent, dark	gal.	1.02	@
Muriatic, 30 degrees	cut.	2.95	@
Nitric, 36 degrees	cut.	6.85	@
Sulphuric, 66 degrees	cut.	2.10	@

ALKALIES.

Caustic soda, 76 per cent (bbls.)	lb.	.07	@
Soda ash (bbls.)	lb.	.04	@

COLORS.

Black:			
Bone, powdered	lb.	.05	@
granulated	lb.	.09	@
Carbon, black (sacks, factory)	lb.	.15	@
Imported	lb.	.06 1/2	@
Ivory black	lb.	.16	@
Lampblack	lb.	.16	@
Oil soluble aniline	lb.	.25	@
Rubber black	lb.	.07	@
Blue:			
Cobalt	lb.	.25	@
Prussian	lb.	1.10	@
Ultramarine	lb.	.18	@
Brown:			
Iron oxide	lb.	.03	@
Ochre, domestic	lb.	.02	@
imported	lb.	.05 1/2	@
Sienna, Italian, raw and burnt	lb.	.06 1/2	@
Umber, Turkey, raw and burnt	lb.	.05	@
Green:			
Chrome tile	lb.	.17	@
Oxide of chromium (casals)	lb.	.40	@

Red:			Oils.		
Antimony, crimson, sulphuret of (casks).....	lb.	.50 @	Castor.....	lb.	.25 @ .30
crimson, "Mephisto" (casks).....	lb.	.45 @ .50	Corn, crude (bbls.).....	lb.	*18 @
Antimony, golden, sulphuret of (casks).....	lb.	.25 @	refined.....	lb.	*21½ @
golden, "Mephisto" (casks).....	lb.	.15 @ .30	Cotton.....	lb.	.35 @
golden sulphuret (States).....	lb.	.28 @	Glycerine (98 per cent).....	lb.	.21 @ .27
red sulphuret (States).....	lb.	.25 @	Glycerole.....	lb.	.12½ @
vermillion sulphuret.....	lb.	.35 @	Linseed, raw (carloads).....	gal.	1.00 @
Arsenic, red sulphide.....	lb.	.25 @	Linseed compound.....	lb.	1.00 @
Indian, pure bright.....	lb.	.09 @	Palm (Niger).....	lb.	.24 @
Iron oxide, reduced grades.....	lb.	.12 @	Pelletatum.....	lb.	.08½ @
pure bright.....	lb.	.16 @	Petroleum.....	lb.	.06½ @
Oil soluble aniline, red.....	lb.	*2.50 @	Pine, steam distilled.....	gal.	.66 @
Oxymy.....	orange.....	*2.00 @	Pine tar.....	gal.	.75 @
Venezian.....	orange.....	.15 @	Rapeseed, refined.....	gal.	1.65 @
Vermillion, English, pale, medium, dark.....	lb.	.75 @	blown.....	gal.	1.75 @
White:			Rosin.....	lb.	.15½ @
Aluminum bronze powder.....	lb.	.85 @	Soy bean.....	lb.	.35 @
C. P. (cases).....	lb.	.75 @	Tar, commercial (cases).....	lb.	.35 @
superior.....	lb.	1.00 @	Noreal No. 30.....	gal.	.65 @
Lithopone, imported.....	lb.	None	SOLVENTS.		
domestic.....	lb.	.07 @ .08	Acetone (98-99 per cent drums).....	lb.	.30 @
Ponolith (carloads, factory).....	lb.	.07½ @	methyl (bbls.).....	gal.	1.50 @
Zinc oxide, Horsehead (leg carload, factory).....	lb.	.08 @	Benzol, C. P. (drums).....	gal.	.22 @ .27
"XX red".....	lb.	.10½ @	90 per cent.....	gal.	.22 @ .27
Special.....	lb.	.10½ @	Beta-naphthol, resublimed.....	lb.	.50 @
French process, seal.....	lb.	.12 @	ordinary grade.....	lb.	.08 @
green seal.....	lb.	.12½ @	Carbon bisulphide (drums).....	lb.	.06½ @ .08
white seal.....	lb.	.13½ @	tetrachloride (drums).....	lb.	*.15½ @ .16½
(States).....	lb.	.09 @	Halowax oil No. 1000 (f. o. b. Wyandotte).....	lb.	*.35 @
Zinc sulphide, pure.....	lb.	.07½ @	No. 1001 (f. o. b. Wyandotte).....	lb.	*.24½ @
Yellow:			Naphtha, motor gasoline (steel bbls.).....	gal.	.23½ @
Cadmium, tri-sulphate.....	lb.	*2.68 @	73 @ 75 degrees (steel bbls.).....	gal.	None
sulphide, yellow, light, orange.....	lb.	2.00 @	68 @ 70 degrees (steel bbls.).....	gal.	None
.....	lb.	1.85 @	Solvent.....	gal.	.21 @
Chrome, light and medium.....	lb.	.31 @	V. M. & P. (steel bbls.).....	gal.	.25 @ .35
Ochre, light or dark.....	lb.	.01 @	Toluol, pure.....	gal.	.70 @
Oil soluble aniline.....	lb.	.03½ @	Turpentine, spirits.....	gal.	.70 @
Zinc chromate.....	lb.	*.50 @	wood.....	gal.	.65 @
COMPOUNDING INGREDIENTS.			Venice.....	gal.	.65 @
Aluminum flake (bbls. factory. Less 5% carload).....	ton	26.00 @	Osmaco reducer.....	gal.	.35 @
(casks factory. Less 5% carload).....	ton	26.00 @	Nylo, pure.....	gal.	.45 @
Aluminum oxide.....	lb.	*1.18 @	commercial.....	gal.	.30 @ .35
Ammonia carbonate, powdered.....	lb.	.12½ @	SUBSTITUTES.		
lumps.....	lb.	.14½ @ .15	Black.....	lb.	.11 @ .18
Asbestos (bags).....	ton	25 @ 30.00	White.....	lb.	.13 @ .25
Asbestos (bags).....	ton	35 @ 40	Brown.....	lb.	.18 @ .24
Barium, carbonate, precipitated.....	ton	55.00 @	Brown factice.....	lb.	.10 @ .22
Barium sulphide, precipitated.....	ton	60.00 @	White factice.....	lb.	.08 @ .24
Barytes, pure white.....	ton	30.00 @ 32.00	Paragon.....	cu. ft.	17.08 @
off color.....	ton	20.00 @ 22.00	hard.....	cu. ft.	16.58 @
uniform.....	ton	35.00 @ 35.00	VULCANIZING INGREDIENTS.		
Basofo.....	lb.	.04½ @	Lead, black hyposulphite (Black Hypo).....	lb.	.39 @
Blanc fixe.....	lb.	.04½ @	Lead, zinc, domestic.....	lb.	.13½ @
Bone ash.....	lb.	.05 @ .05½	Sulphur chloride (drums).....	lb.	.07½ @ .10
Calc, precipitated, extra light.....	lb.	.04 @ .04½	Sulphur, flour, Brooklyn brand (carloads).....	cu. ft.	3.40 @
China clay, domestic.....	ton	15.00 @	pure soft (carloads).....	cu. ft.	3.45 @
imported.....	ton	.02½ @	superfine (carloads, factory).....	cu. ft.	2.50 @
Cork flour.....	lb.	.50 @	(See also Colors-Antimony)		
Cotton linters, clean mill run, f. o. b. factory.....	bale	None	RESINS AND PITCHES.		
Fossil flour, powdered.....	ton	60.00 @	Canella gum.....	lb.	.70 @
(bolted).....	ton	65.00 @	Pine tar, retort.....	bbl.	15.00 @
Glue, high grade.....	lb.	.36 @	pitch, kiln.....	bbl.	14.00 @
medium.....	lb.	.31 @	coal tar.....	lb.	.09½ @
low grade.....	lb.	.22 @	pine tar.....	bbl.	.04½ @
Graphite, flake (400 pound bbl).....	ton	.10 @ .08	points.....	lb.	.15 @
amorphous.....	lb.	.04 @	Resin, Pontianak, refined.....	lb.	None
Ground glass FF. (bbls.).....	ton	*.03 @	fused.....	lb.	None
Infusorial earth (powder).....	ton	60.00 @	Rosin, C.....	lb.	.07 @
(clotted).....	ton	65.00 @	powdered.....	lb.	.17 @ .81
Mica, powdered.....	lb.	.03½ @ .05	Shellac, fine orange.....	bbl.	13.00 @ 13.50
Plaster of Paris.....	ton	.30 @	Tar, kiln.....	bbl.	14.00 @ 14.50
Pumice stone, powdered (bbl).....	ton	*6.00 @	retort.....	bbl.	14.00 @ 14.50
Rotten stone, powdered.....	lb.	.02½ @ .04½	WAXES.		
Rubber flux.....	lb.	*.15 @	Wax, beeswax, white.....	lb.	.68 @ .70
Rub-R-Glu.....	ton	22.00 @	ceresin, white.....	lb.	.18½ @ .22
Silic (silica).....	ton	.18 @	carnauba.....	lb.	.58 @ .85
Sonapstone, powdered, domestic.....	ton	.18 @	osokerite.....	lb.	.58 @ .60
Starch, powdered corn (carload, bags).....	cu. ft.	.44 @	green.....	lb.	.78 @ .80
Talc, American.....	ton	25.50 @	montan.....	lb.	.20 @ .22
French.....	ton	None	paraffin, refined 118/120 m. p. (cases).....	lb.	.12½ @
Trioli ether, powdered.....	lb.	.01½ @	128/120 m. p. (cases).....	lb.	.13 @
Wyte-lith.....	ton	80.00 @	*Nominal.		
Whiting, Aiba (carloads).....	ton	*6.00 @	THE NEW JERSEY ZINC CO. ACQUIRES WAWAYANDA LAKE PROPERTY.		
commercial.....	cu. ft.	1.30 @	The New Jersey Zinc Co., 55 Wall street, New York City,		
gilders.....	cu. ft.	1.40 @	has now completed the negotiations looking to the acquisition		
Paris, white, American.....	cu. ft.	*2.25 @	of Lake Wawayanda and surrounding property from the New		
English cliffstone.....	cu. ft.	2.00 @	York Transit Co. About 2,700 acres are involved and will be		
Wood pulp XXX.....	ton	34.00 @ 36.00	held by the company as a timber reserve.		
MINERAL RUBBER.					
Gilsonite.....	ton	47.50 @ 57.50			
Genasoc (carload, factory).....	ton	55.00 @			
(less carloads, factory).....	ton	57.00 @			
M. R. X.....	ton	100.00 @			
Liquid rubber.....	lb.	*.14 @			
Pioneer, carload, factory.....	ton	55.00 @			
less carload, factory.....	ton	55.00 @			
Richmond.....	ton	75.00 @			
No. 64.....	ton	50.00 @			
1250 R M. hydrocarbon.....	ton	50.00 @ 55.00			
Refined Elaterite.....	ton	175.00 @			
Raven M. R.....	ton	50.00 @ 60.00			
Walpole rubber flux (factory).....	lb.	.06 @			



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ication tests—tensile strength and
ch, heating (steam pressure), plas-
y, ply separation, etc. And chemical
yses, of course.

DERICK J. MAYWALD, F.C.S.
Water Street New York
See also page 82

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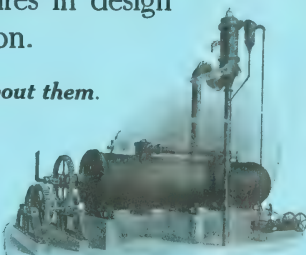
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TABLE OF CONTENTS ON LAST PAGE OF READING.**THE LUXURY TAX ON TIRES.**

WILL the passenger automobile ever live down its unwarranted reputation as a pleasure vehicle? Nothing has ever been adduced to refute the statement of Colonel Colt that only ten per cent of the passenger automobiles of the country are used primarily for pleasure purposes, yet House and Senate conferees have agreed to a luxury tax of five per cent on manufacturers' sales of motor vehicles, tires and accessories. The efficiency of modern business indisputably depends to a remarkable degree upon the use of passenger automobiles by executives, superintendents, managers, salesmen and others. The injustice of levying a luxury tax on commercial vehicles requires no argument. It is difficult to understand what logic justifies the assumption that ninety per cent of the users of motor vehicles and tires should pay a luxury tax that properly applies only to the other ten per cent. Cars and tires have ceased to be luxuries.

The plan of our Solons seems to be to tax wealth, thrift, and industry. Why not try another plan? Tax the idle, the lazy, the vicious. Put a head tax on agitators, on aliens, I. W. W.'s and Bolshevists. As to the last three, make it prohibitive, if that is possible, in the light of their ample funds.

WOULD USE NINE MILLION POUNDS OF GUTTA.

PROFESSOR LLEWELLYN PREECE, of the Institute of Electrical Engineers, proposes an elaborate scheme to enable the British Government to possess its own "All-British round-the-world electric girdle." His plan is a cable 30,000 miles long—3,000 miles across British America and 27,000 miles of submarine cables—every terminus of which would be on British territory.

Such an independent system would be of advantage politically as well as commercially, and the veteran scientist strongly recommends this great undertaking even though the present cable systems cover nearly, or quite all the routes suggested.

The manufacture and successful laying of 27,000 miles of submarine cable is an immense undertaking. The professor thinks it should cost not over \$34,000,000, or if the present Pacific cable were utilized, perhaps \$24,000,000. To prove that this estimate is low it is only necessary to consider one item, gutta percha.

Practically all the submarine cables are insulated with this valuable mineral. They vary but moderately in the amount of the gutta per mile. The French cable, Brest to New York, contains 396 pounds per mile; the Vancouver-Fanning cable, 340 pounds; the Mackay-Bennett, 320 pounds. The Pacific cable has less at deep-sea portions than near land and varies from 250 to 400 pounds, with an average of 330 pounds to the mile. Other important cables have 400, 368, 325 and 320 pounds per mile. Taking 330 pounds as a reasonable average, 8,910,000 pounds of gutta percha would be required. The cost at the present market quotations, \$3 per pound, would be more than \$25,000,000, leaving only \$9,000,000 of Professor Preece's estimate for the entire cost of copper wire and sheathing, besides manufacturing costs, laying and installing.

Should this amount, nearly 9,000,000 pounds of gutta percha, be needed, where would it come from? The world's annual production is estimated at 5,000,000 pounds, but this also includes gutta siak which is useless for insulation. There is practically no gutta percha in the market. Nor is there such amount in stock anywhere in the world to-day, except perhaps unextracted in the trees of the Far East.

However, although European manufacturers rely solely on gutta percha for insulating submarine cables, American manufacturers have successfully utilized rubber for this purpose, and while the longest stretch of such cable is only about 800 miles, it has withstood Arctic cold over land and under water as well as any gutta-protected one. In some short cables it is also claimed that rubber properly applied on tin-coated copper conductors has proved better than gutta percha in tropical waters infested with the Teredo.

Should the British Government adopt Professor Preece's plan, it is more than likely that the manufacturers of that nine thousand leagues of cable under the

sea would be obliged to insulate with rubber or wait many years and pay a larger price than the Professor estimates.

ANTIDOTES FOR BOLSHEVISM.

ONE of the marked results of the war upon Americans is the inculcation of the principle of thrift. The wonderful response of all classes to the call of the nation to purchase Liberty Bonds and Thrift Stamps has popularized saving and investing. As a consequence those who never before saved any of their earnings have become bond-holders, bank-depositors and investors.

The same sort of education has been given for two years by President Rieder of the Canadian Consolidated Rubber Co., who introduced a plan whereby employes could leave part of their wages with the company and receive interest at the rate of six per cent per annum, compounded monthly. Naturally there were some over-cautious employes who at first feared that the company had some ulterior motive. When they learned, however, that they could withdraw any part or the whole of their deposits at any time, these suspicions departed and the plan has been proved a success. It has resulted not only in the pride of the employes in investment, but in their increased stability and faithfulness. Those who have thus invested earnings have also a greater interest in the company and its work, and are much better workmen.

The rubber company mentioned is but one of many in this country and Canada where similar plans have been tried and in no case has it proved other than advantageous to both employer and employee. Furthermore an I. W. W. or a Bolshevik is anathema to an investing employe, for is he not a capitalist?

No one can read the names of the dead and wounded soldiers which have been published in the daily papers without being impressed by the cosmopolitanism of our army. Truly every race and nation is represented, yet all these men, by their participation in the war, as units in the United States Army, have fully earned the title "American."

The pay roll of every large rubber concern presents a similar variety of racial surnames. The notices posted in the factories, printed in several languages, show the polyglot character of the rank and file of the work people.

The tendency of immigrants is to segregate into racial groups which, except for their work, remain as alien as though they were still in their native countries. In many cases there is slight endeavor on their part to learn the language of this country, no sympathy with things American nor appreciation of that thoroughness that makes for the highest efficiency.

That all workmen should understand English is of the first importance. And next to learning the language of their adopted country is to know its principles of equality, fair play and justice. Only by such means can the industries of this country be assured of progress and prosperity. The workman who understands that what is

for the common good of both employer and employe is ultimately best for each individual, himself included, is the only valuable one. As a means toward this end leading rubber manufacturers are maintaining schools where the English language is taught and at the same time the advantage of becoming American citizens is made plain.

Were every factory manned by English-speaking, self-respecting money-saving American citizens, native or naturalized, there would be little labor trouble, less fear of I. W. W.-ism and Bolshevism.

MEXICAN RUBBER LOOKING UP.

THE Intercontinental Rubber Co. and some forty other big oil, copper, and land companies, together with big banks such as the National City, the Guaranty Trust and J. P. Morgan, are out to reconstruct Mexico. As a beginning they have formed the National Association for the Protection of American Rights in Mexico. As our neighbor to the south is bankrupt, a receivership is planned, this to be brought about by the moral suasion of the civilized world. Armed intervention is not planned. Instead, wise and efficient support of a stable Mexican government is to be offered,—perhaps insisted upon.

It is high time and it is, moreover, the time. German propaganda is slumping more and more. Teutonic money that formerly was poured out by millions is becoming scarce. Hun promises and boasts are beginning to be understood for what they are worth. Arms and ammunition for insurgents are hard to get. Besides this, thousands of Mexicans on both sides of the border are enthusiastically in favor of the plan.

A wisely administered receivership means peace for the Mexicans, safety for foreigners, and renewed prosperity for the rubber plantations, and the guayule producers.

THE DAILY PAPERS ARE FEATURING A STORY TO THE effect that one man was killed and two women burned by the explosion of a hot-water bottle, and furthermore that the explosion was heard for blocks and several windows broken.

The inference is that the bottle contained hot water; that said hot water suddenly, energetically, and feloniously, turned itself into steam and did rend, wreck and scald, to the discomfort and damage of certain and sundry individuals. Without in any way impugning the veracity of the narrators, we venture to point out that hot water is not explosive. Even in a superheated bed its contents do not vaporize. The chances are that the bottle was filled with T.N.T., which conservative manufacturers do not advise for foot warming.

THE FOUR-MILLION-DOLLAR POTASH PLANT, NEAR SAN Diego, California, is to be shut down. As it made potash from kelp this is a rare opportunity for some manufacturer of "seaweed rubber."

The Production of Guayule Rubber.

From a special report by Henry C. Pearson, prepared for the Bureau of Foreign and Domestic Commerce.

EVEN before the Spanish occupation northern Mexico was a rubber-producing country, the source being a shrub or dwarf tree to-day known as guayule. The natives obtained the gum by chewing the bark and made toy balls of it. It is said that this fact was first chronicled by a Jesuit priest, Negrete, about the middle of the eighteenth century.

The plant was discovered by Dr. J. M. Bigelow, in 1852, when he was attached to the Mexican Boundary Survey. It was later described and named *Parthenium argentatum* by Professor Asa Gray, of Harvard University.

In 1876 a guayule product, known as Durango rubber, was exhibited at the Philadelphia Centennial Exposition. Attention was drawn again to it in 1886, when an English mining engineer, working in Mexico, reported to his principals that he had found "an enormous quantity of a plant that yielded 10 per cent of rubber."

It was not until 1888, however, that any attempt was made to extract the gum commercially. In that year John H. Cheever, the founder and at that time the treasurer of the New York Belting & Packing Co., New York, imported 100,000 pounds of the shrub, known as "hule." The bark when removed yielded about 18 per cent of rubber, which was considered equal to the best grade of "centrals." Because of the expense of transportation and treatment the experiment was not repeated.

In 1896 Guillermo Vogel, of Mexico City, sent samples of the shrub and rubber from it to manufacturers in the United States, but they attracted little attention.

Germans in Mexico endeavored to interest American capital in the extraction of the gum in the late nineties with little success. That some of the shrub or bark was sent to Germany was certain, but the trade heard nothing of it.

DEVELOPMENT OF EXTRACTION PROCESSES.

In 1899 William Prampolini, an Italian, took out a patent for extracting guayule by solvents. His apparatus was constructed at Monterey, Mexico, but was only experimental. Two years later the Bergner process was patented in Mexico, and this was followed by a large number of patents for extraction processes, some practical and some otherwise, and for several years afterwards applications for patents for this purpose were numerous.

In 1903 a small factory was established at Jimulco, Mexico, by Adolpho Marx.

In 1905 a factory in Germany, backed by large financial interests, did a successful business extracting the guayule from the shrub, which was gathered in Mexico, baled, and shipped to Germany. The Mexican Government, however, placed an export duty of 15 pesos per ton on the shrub, which, with the cost of gathering and transportation, rendered the industry

unprofitable.

Beginning in 1902, certain American capitalists financed a series of experiments that led to an invention by William A. Lawrence, by which, in 1904, rubber was extracted by a mechanical process, and 50 pounds were shipped to the United States. This was the real beginning of the extraction of guayule on a commercial basis in Mexico, and in 1906 it began to be used in quantity. Factories established in the States of Durango, Coahuila, San Luis Potosi, and in

Texas soon produced large quantities of rubber. Improvements in the processes of extraction tended to produce superior grades, and the guayule industry was fully established on a profitable basis. The rival companies, though strongly competing, were able to secure good prices and the question of a supply of the shrub became important. This led to the purchase of large tracts where the shrub was plentiful and the erection of extraction plants in many little-known sections of Mexico.

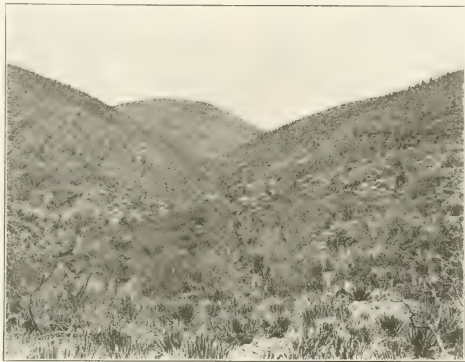
In 1907 the leading producers were companies briefly designated as the Continental, the Madero, and the Anglo-Mexicana. The Continental-Mexican Rubber Co. had its principal

plant at Torreon, its other factories being at Saltillo, Ocampo, Gomez Palacio, and La Grunidora. It had at that time acquired great tracts of guayule-producing land. The Madero family were the principal owners of the Compañia Exploradora Coahuilense, S. A., with headquarters at Parras, Coahuila, and other plants at Las Delicias, Cuartos Cienegas, and Vanegas. They also owned or controlled great tracts of shrub-producing land. The third largest interest was the Compañia Exploradora de Caucho Mexicana, with factories at Saltillo and Jimulco. There were also ten or a dozen other smaller concerns. From 1910 the production increased to a remarkable extent, though the revolutions of recent years in Mexico interfered seriously with the industry.

ORIGIN OF THE NAME.

The name guayule, guayhule, or huayule, comes from the Spanish *hay* and Indian *hule*, or "rubber yielder." In Durango, it is called *yerba de hule*; and in San Luis Potosi is called *yule*; also called *yiguhite* near Saltillo, and sometimes *copaline*.¹ Prampolini calls it *yerba del negro* or *mariola*, by which last name it is widely known, though *mariola* rightly means a kindred species (*Parthenium incanum* H. B. K.).

Dr. Seler, of Berlin, however, questions Endlich's idea that guayule=*hay* (has or there is) and *hule* (rubber); *hayhule*=rubber bearer. Seler says it is from two Indian words, *guah* (wood, tree, or forest) and *olli* (rubber), thus *guaholli*=



TYPICAL GUAYULE COUNTRY.

¹"The Economic Importance of Plants," by Dr. R. S. Seler, in "Die Pflanzenwelt," Leipzig, 1907.

	Per cent.
Wood	47.0
Bark	44.5
Leaves	8.5

PROSPECTS OF RUBBER PRODUCTION IN QUEENSLAND.

UNDER the title "Neglected Industries," the "Queensland Agricultural Journal" for August, 1918, announces that Pará, Ceara, and other rubber-producing trees thrive luxuriantly in tropical Queensland, but that capitalists, when they are asked why they invest no money in rubber plantations in that country, inquire: "How can Queensland, where wages are high and where strikes threaten at critical moments, try to compete with countries where there is an abundance of colored native workers, where wages are low and where land can be leased at low rent, such as British New Guinea?"

At first glance that settles the whole matter, but on closer examination we find that rubber planting is just as profitable in Queensland under labor conditions suitable to white people as it is in a country where colored workers are used. Without going into details, the estimated cost of a rubber plantation in Queensland, comprising 500 acres bearing 75,000 trees, including wages, buildings and equipment, is £34,000. These trees should be ready for tapping after six years, and in the first year of tapping would bring in £15,000; the debit of £19,000 should be changed in the seventh year by a £30,000 crop into a profit of £11,000 above the cost of the plantation; the profit for the eighth year and every year after that should be £45,000 a year.

But even on a smaller scale the business pays. In New Queensland on the east and west coast of the peninsula, land is chiefly planted with sugar, as the climate and rainfall leave nothing to be wished for. The profit and loss account of 20 acres of rubber is as follows: the price of cleared land is £20 an acre; the total cost of exploitation for the first five years is £432. After six years the tapping can begin, each tree giving one pound of dry rubber, the seventh year two pounds, the third year three pounds, and so on, so that in the first three years of tapping, 18,000 pounds of rubber will be obtained, which, at three shillings a pound, means £2,700, from which the cost of collecting the rubber—one shilling per pound or £900 for the crops, including cases and freight—must be deducted.

Many plantations in Queensland are surrounded by forests and shrubs which offer a danger of fire. These could be removed and replaced by rubber trees, so that the profits may be continually increased.

RUBBER PRODUCTION ON HAINAN ISLAND.

The report of the commissioner of customs of the port of Kiangchow, Hainan—an island belonging to China, between latitude 18° and 20° N., deals with the increased production of rubber in that territory. It sums up the situation as follows:

At present the industry is chiefly undertaken by returned emigrants from the Malay States. Since 1910 the Kiung An Co. has planted 6,000 rubber trees in the Kachek district, and the Ch'iao Hsing Co. 45,000 trees in the Nododa district. The latter company has not yet begun tapping its trees. Two years ago the Kiung An Co. tapped 2,000 trees and this year the number was 3,000, from which 14 pounds was produced daily.

Rubber to the amount of 3,066 pounds was exported to Singapore during the year, either direct or through Hongkong and Bangkok. Export is made in sheets averaging 16 inches long, 10 inches wide and ¼-inch thick. Prices on the last shipment reached only \$48 per picul (133-1/3 pounds as against \$100 per picul on the first consignment sent to Singapore, said to be first-quality.

Some months ago Lin I-shun, a Cantonese merchant in Singapore, obtained from the Ministry of Agriculture and Commerce a grant of 100,000 acres of land on which to grow 5,000,000 rubber trees, in return for which he guarantees to pay a royalty of \$5,000,000 to the Government when the trees have reached a flourishing condition. In December Mr. Lin sent three men to the island to look for suitable areas for planting rubber. A large part of the entire island is said to be suitable for rubber growing.



BALE OF GUAYULE SHRUB.

According to Whittlesey (1905, p. 5), guayule plants contain rubber as follows:

	Per cent.
Trunk bark	21.4
Root bark	19.5
Branches and leaves	9.7
Trunk wood	Nil.
Root wood	1.7

The yield of marketable rubber from the wild plants varies according to the condition of the plants and the process of extraction employed. The extraction runs from 6 per cent for ex-



GUAYULE BALES IN FACTORY YARD.

periments with average Texas guayule to 15 per cent for some of the highest grade of Mexican, a fair average yield equaling 12 per cent of the weight of the moderately dry plant.

(To be continued.)

Gas Defense Equipment and the Rubber Industry.

J. ALFRED C. K. JOHNSON, Chemical Warfare Service, United States Army.



FIG. 1.—TYPES OF GAS MASKS USED BY AMERICAN, ALLIED, AND GERMAN ARMIES.

Sitting, left to right:—1. German gas mask. 2. Russian gas mask. 3. Italian gas mask. 4. British mask for motor truck drivers. 5. British airplane respirator. 6. Experimental mask with metal face piece. Designed by Major Connel, of Medical Corps, American Army.

Middle Row—7. First emergency method put into practice after initial gas attack in April, 1915. Colonel Goodwin, of Medical Department, British Army, devised this mask. 8. British "P. H." helmet emergency type first used in summer of 1915. 9. British "box respirator," standard type used by British Army. 10. French M-2 mask, original French type used out-lying of 1918. 11. Original French artillery mask designed by Tassin. 12. French "A. R. S." mask, last type used by French Army.

Top Row—13. Original American Navy mask. 14. American Navy mask, final type. 15. American "box respirator," a type used by U. S. Army throughout the war. 16. The improved design developed at Gas Defense plant to simplify manufacture. 17. American A. T. mask, all rubber mask in limited production at end of war. 18. American K. I. mask, sewed fabric mask in limited production at end of war. 19. American "Model 1919" mask, improved type of mask for production when armistice was signed. This mask embodied the good features of 17 and 18 and was extremely simple to manufacture.

THE WAR DEPARTMENT made heroic demands upon the rubber industry for rubber materials required in gas defense equipment and it is gratifying to be able to state that this industry heroically met those requirements. During the period of our participation in the war the rubber industry furnished products to the Gas Defense Division to the value of \$12,671,461, comprising the following commodities and quantities:

Commodity.	Quantity.
Face fabric	1,000,000 yards
Band fabric	82,380 yards
Lining tape	21,170 yards
Innermost hose	296,900 yards
Strapping	43,200 yards
Rubberized stockinet	159,600 yards
Nose pads	9,210,000 pieces
Deflectors	645,000 pieces
C. E. hoods	2,317,000 pieces
K. I. hoods	2,448 pieces
A. T. hoods	261,400 pieces
Flexible hose	7,070,000 pieces
Mouth-pieces	7,550,000 pieces
Flutter valves	8,500,000 pieces
Flutter valves (English type)	850,000 pieces

Commodity.	Quantity.
Diaphragms	12,800,000 pieces
Charismatic tubes	1,120,000 pieces
Charismatic tubes	1,378,000 pieces
Smoker bands	2,500 pounds
One-way respirators	4,000,000 pieces
Flutter valves	18,700,000 pieces
Hard rubber castings	700,000 pieces
Rubberized felt	103,700 yards
Flutter tape	14,660,550 yards
Accessory type	4,106,300 yards

The purpose of this article is to point out the great importance of rubber in the gas mask, to show the intimate connection of the rubber industry with the development and production of this most necessary equipment, and to furnish some technical information acquired in gas-mask production, which may be of future value to the industry.

It can be stated that rubber was universally used in all types of masks. This is illustrated most effectively in Figure 1 in which every respirator, except the very earliest English emergency type, used rubber in various ways. The Germans

EDITOR'S NOTE.—Before the war, Major Johnson was chief chemist of The Goodyear Tire & Rubber Co., Akron, Ohio. He was commissioned in the Sanitary Corps, National Army, in January, 1918, with rank of captain and was assigned to the Gas Defense Service where he was given the following assignments: rubber part procurement; development of Akron Tisot mask; officer in charge Long Island laboratories; technical director Gas Defense Division, Chemical Warfare Service. In October, 1918, he attended the Interallied Conference on Gas Warfare in Paris.

used less than any other nation (thanks to allied sea power) but were not able to eliminate it entirely. Their earliest masks were made of rubber fabric which was abandoned in favor of oiled leather as soon as the rubber shortage became acute. They substituted cloth-

covered spiral springs for elastic webbing and the only rubber used in the greater part of their production was a washer containing very little new rubber, to make a gas-tight joint between the canister and the mask. It is interesting to note in connection with this group that the Russian mask contained more rubber than any of the others, as it had a complete hood covering. The final English, all

French, and all American masks

made gas-tight by use of wire, adhesive tape, and rubber cement.

THE FIRST 25,000 MASKS.

When the United States went into the war practically nothing was known of gas warfare. In fact, very soon after the first use of gas in April, 1915, by the Germans, the Allies adopted a policy of strict secrecy in order that their offensive and defensive plans might be more effective.

It can be easily appreciated that the Bureau of Mines faced a difficult task when it was requested by the War Department on May 16, 1917, to furnish 25,000 respirators in three weeks. The Director of the Bureau, Van H. Manning, had realized the ugly possibilities of gas warfare and had organized a bureau under the direction of G. A. Burrell for the purpose of gas investigations. Mr. Burrell called upon Bradley Dewey, a Pittsburgh chemical engineer, to take charge of the production of the first 25,000 masks.

It was recognized that a delivery could not possibly be made in three weeks' time, an impossibility, even if a settled design had existed. Contracts were placed with The B. F. Goodrich Co., Akron, Ohio, for furnishing complete face-pieces and with the American Can Co., New York, for the canister and final assembly. Only those actually connected with the enterprise at the time would appreciate the intense effort required of all to make this delivery by the end of June, which was done. While the masks resulting from this early effort were not adequate when they reached the front, because of new gases introduced in the interim, nevertheless they were adequate to meet conditions in 1918 when they were made and a credit to all concerned.

RUBBER MANUFACTURERS COOPERATE.

The memorandum of May 16, 1917, from the Chief of Staff called for completion of

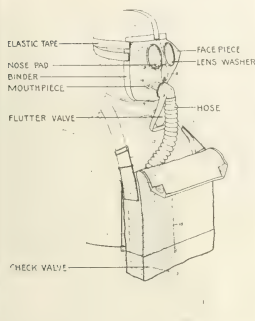


FIG. 2.—AMERICAN BOX RESPIRATOR, C. E. TYPE, SHOWING RUBBER PARTS.

used rubberized fabric of some form, either unreinforced or united to close-woven cloth or stockinet.

OPERATION OF THE AMERICAN RESPIRATOR.

An outline drawing of the American box respirator furnished to our troops is shown in Figure 2 and in order that the reader may understand more clearly the various matters discussed later it will not be out of place to describe briefly the manner in which the respirator functions. Upon inhalation, the air passes into the bottom of the canister 18, through rubber diaphragm check valve 31, up through absorbent chemicals and mechanical filters into flexible rubber hose 17, through the face-piece by way of an aluminum die casting and into the mouth of the wearer through a rubber mouth-piece 16, which is worn between the lips and the teeth. At the same time any passage of air through the nose is stopped by a spring and rubber nose clip 8, and 9. Upon exhalation the air passes out through the same mouth-piece through another passage in the die casting and finally to the outside air through the rubber exhalation or flutter valve 14.

It is evident that in a device of this kind the lungs are protected by the closure of the nose and the direct connection of the mouth-piece. However, since the Germans used gases which immediately closed the eyes and even led to temporary blindness it was essential that the face-piece should provide a tight fit with the face and that the rubberized cloth in the face-piece prevent the entrance of gas by permeation. Gas-tightness of the eye-piece was insured by a rubber gasket and the various points were



FIG. 3.—AMERICAN BOX RESPIRATOR, C. E. TYPE.

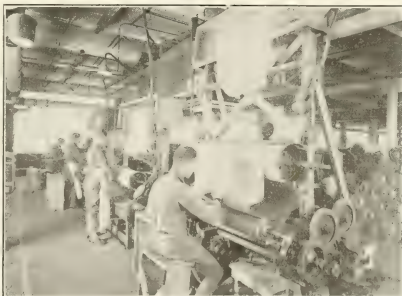


FIG. 4.—ELECTRIC RUBBER FABRIC TESTING MACHINES.

Mr. Dewey was commissioned in July, 1917, a major in the Sanitary Corps of the Medical Department and made responsible for the production of gas defense equipment. In July, 1918, this activity with all others involved in the gas warfare was consolidated by an order of the President into the Chemical Warfare Service, United States Army, and Major General William S. Sargent placed in charge. Gas defense production was made a division of this service under Colonel Bradley Dewey and grew in its schedules and activities until, on November 11, 1918, it had through-out the country, 80 organized detachments and a personnel of 274 officers, 2,353 enlisted men and 13,000 civilians.

1,100,000 respirators by June 30, 1918. In July arrangements were made with The B. F. Goodrich Co., The Goodyear Tire & Rubber Co., and the United States Rubber Co. to supply 320,000 complete face-pieces ready for assembly, and the same quantity of other rubber parts including flexible hose, flutter valves,

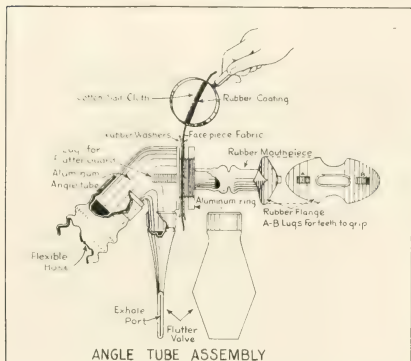


FIG. 5.—TUBE ASSEMBLY SHOWING RUBBER MOUTH-PIECE, FLUTTER VALVE AND FLEXIBLE HOSE.

mouth-pieces, rubber diaphragm check valves and rubber washers for the die-casting assembly. The B. F. Goodrich Co. showed a very fine cooperative spirit in assisting the other two companies to bid intelligently by giving them the benefit of its previous mask-making experience which included not only the Army order for 25,000 but also a Navy order. Without this assistance the other two companies would have been reluctant to bid on a proposition which was not worked out in complete design and specification. This marked the beginning of the cooperation which continued between these companies on all matters pertaining to gas masks. This spirit of cooperation was universally evident among the various rubber companies who later supplied material. It is not going too far to say, based on gas-mask experience, that such cooperation carried into all lines would not only benefit all participating but would advance the industry. After all, no company has a monopoly on good ideas.

The months of July, August, September, and October, 1917, were consumed in getting various mold equipment and in devising methods of manufacturing. During this period, and in fact until the end of the year, questions of design and specifications were in a state of flux, partly because the Gas Defense Service required time to determine various important details of design and partly because one company after another would find an improvement in method or design which would be of such advantage that its adoption by all was desirable. Again, the Gas Defense Service had realized the importance of the highest perfection necessary in a respirator and consequently insisted on high standards of deliveries. The manufacturers, on the other hand, without detailed and sufficient specifications, with frequent changes coming through, with a vivid impression of the need of rapid action, and not as clear a vision of the need of extreme perfection, made deliveries of masks and parts which necessitated high rejections at the assembly plant. It was a most trying period and only the real desire on the part of all involved to see that our soldiers had good gas masks, kept the various elements together through this time.

RUBBER MANUFACTURING COMMITTEE FORMED.

In November, Colonel Dewey, at the suggestion of the rubber manufacturers, organized a rubber manufacturing committee, composed of Dr. W. C. Geer, of The B. F. Goodrich Co., chairman, Dr. T. H. Whittelsey, of the United States Rubber Co., and C. R. Johnson, of The Goodyear Tire & Rubber Co. This was done with the realization that the rubber companies should be in necessary touch with gas defense problems and that they could render considerable aid in the preparation of specifications. A quotation of the minutes of the first meeting indicates the spirit with which the committee worked.

(a) It is decided that the committee itself should help the Gas Defense Service in so far as research, development and specification problems are concerned. The problems of production volume, production distribution, relationships of personnel, etc., are to be divorced from the work of this committee.

(b) It is agreed that where new ideas are developed which may have value to other parts of the rubber industry, preliminary tests of both the raw and fabricated product shall be conducted without a full disclosure of the exact nature of the process by which the articles are made. It is, however, definitely agreed that whenever the Gas Defense Service feels that the tests in themselves show that the product is needed and should be used on soldiers in the field, the whole committee shall then be given every single detail of design, composition, and methods of manufacture in so far as it is possible to describe such details without the use of detailed dimension drawings or photographs.

(c) It is agreed that no member of the committee commit himself to the policy of inviting other rubber interests into his factory.

(d) The Gas Defense Service agrees that in the future, it will wherever possible before making any changes in specification or in methods of inspection, submit an outline of the changes to this committee for its comment. Furthermore, it agrees that in so far as possible it will see that the committee is kept informed regarding the less confidential features of gas warfare.

This committee prepared in frequent conference the complete specifications of the rubber materials used in gas masks and carried on by means of the available laboratory facilities many development and research problems the solution of which was urgently needed by the Gas Defense Service.

Early in January the writer entered the Gas Defense Service and was replaced on the committee by William Stephens, of The Goodyear Tire and Rubber Co. This committee was at that time officially recognized by The Rubber Association of America as its representative on gas defense matters. It continued to give



FIG. 6.—FLUTTER VALVE INSPECTION.

valuable service during the period of the war. It was enlarged in personnel in September, 1918, as follows: Dr. W. C. Geer, chairman, The B. F. Goodrich Co.; Dr. Theodore Whittelsey, United States Rubber Co.; William Stephens, The Goodyear Tire & Rubber Co.; T. W. Miller, The Faultless Rubber Co.; L. C.

Himebaugh, British-American Manufacturing Co.; George A. Luddington, The Fisk Rubber Co.; George A. Daum, Pennsylvania Rubber Co.

The closer contact resulting from the Rubber Committee was

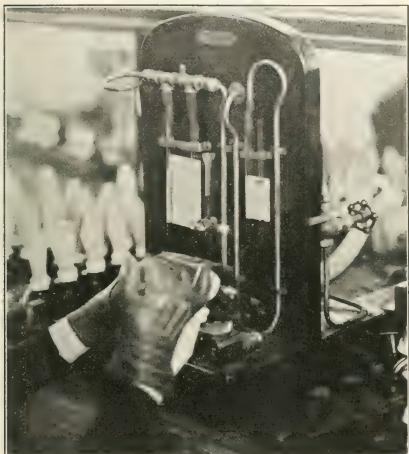


FIG. 7.—FLUTTER VALVE LEAKAGE-TESTING APPARATUS.

evidenced by a better appreciation on the part of the manufacturers of gas defense needs and this was reflected in better deliveries of rubber parts. By February, production had reached a firm basis and in the three succeeding months the quality of production was improved to such an extent that rejections at the assembly plant were reduced to a very low percentage.

RUBBERIZED FABRIC EXTENSIVELY USED.

Rubberized fabrics were extensively used in mask manufacture and upwards of 1,500,000 yards were made. In the early days many difficulties were encountered and specifications were changed several times before a satisfactory gas-proof fabric was obtained.

At first a No. 4 sail-cloth coated on one side with rubber was used. The amount of rubber was insufficient and many masks were unsuitable on account of light spots and even pinholes. To overcome this, more rubber was used and both sides of the fabric were coated. With one ounce per square yard of rubber on the outside, 3.6-ounce sail-cloth and 4-ounce rubber on the inside, there was a total weight of 8.6-ounces per square yard. This, however, still resulted in light spots which were a cause of concern to the Service. At the same time it was reported from abroad that the Germans were using a new tear-producing gas, chloropicrin, which had great power in penetrating rubber and consequently with thinly coated fabrics might soon put soldiers out of action. Steps were therefore taken to increase the rubber coating and by compounding research to find a combination, if possible, which would better resist the gas. Hundreds of compounds were produced and tested and it was found that paraffine in small quantities incorporated in the rubber was most useful in increasing resistance.

FABRIC TESTING METHODS AND APPARATUS.

The method of testing employed at first consisted of putting a

thin glass-sealed capsule of the poison liquid (chloropicrin, boiling point, 122 degrees C.), in a wide-mouthed 250-cc. bottle, covering the mouth of the bottle with one layer of the fabric to be tested, breaking the capsule and noting the time for the gas to make itself evident to the eye or nose. This method was unsatisfactory for two reasons—difference in sensibility of the observers, and marked effect of temperature on the rate of permeability. This method was replaced by one worked out by the Bureau of Mines which gave much more consistent results.

The apparatus consisted of a silvered, two-part drum in the lower half of which was placed the liquid chloropicrin, the fabric to be tested acting as a diaphragm between the upper and lower halves, the upper half being provided with an arrangement for sweeping air over the upper surface of the fabric. The air was swept out through hot tubes which served to break down any chloropicrin to chlorine as soon as it came through. This end point was made evident by the use of starch iodide solution. While this apparatus provided an accurate end point and temperature control of the chloropicrin, it did not provide for temperature control of the incoming air and, therefore, the temperature of the fabric. The importance of this was not realized until summer when the permeability number of given fabric specifications went down markedly. The apparatus was finally modified by the Gas Defense Division to provide ample thermostatic control of liquid and fabric and thoroughly consistent results were then obtained.

The early requirements for fabric to test 8 minutes against chloropicrin were soon raised to 17 minutes. At this period it seemed likely that fabric with resistance of one hour might be demanded at any moment by the use on the part of the Germans of even more penetrating gas. It was recognized that this requirement could be met by increasing the amount of rubber coat, but this plan suffered two drawbacks—one, a too great increase in thickness and stiffness of the cloth, and the other, the requirement of too long a time for aeration. This latter term may be explained by the fact that permeation of rubber by these gases was a solubility phenomenon, layer by layer, through the rubber film. A thicker rubber which required one hour for the gas to penetrate required a correspondingly long time for the gas absorbed in the rubber to dissipate by evaporation. As a practical result, the soldier might be protected against a gas attack, put his mask away in his knapsack and later, when



FIG. 8.—FINAL ASSEMBLY OF R. F. K. TYPE MASKS.

wearing his mask, actually suffer a gas attack from the mask itself as the gas evaporated from it.

THE DEVELOPMENT OF FABRIC SPECIFICATIONS.

It was at this time, therefore, that the greatest amount of research work on fabric was performed by the three rubber companies who were making masks. As an outgrowth of this

work several specifications were developed providing protection up to 48 hours against the standard test which was in itself much more severe than field conditions. None of these fabrics was ever used, as the development of gas warfare did not demand it. They did, however, represent a reserve for any future developments, thus giving rise to an increase in confidence. These fabrics were, as a rule, made up of rubber but depended for their impermeability upon a film of different material.

The final specification used comprised of a No. 4 sail dyed olive drab and coated on one side with rubber to a total weight of 17 ounces. A lighter 11-ounce fabric was used for facing the band of the mask on account of its greater adaptability for yielding a mask with no wrinkles in contact with the face.

There were two types of compounds used and authorized by the Service, for the reason that various producing companies found them more adaptable. One based upon formulas obtained from the English carried approximately 60 per cent rubber and the balance inorganic fillers chiefly composed of China clay and litharge. A small amount of mineral rubber and brown substitute was used. The latter was eliminated later. This compound lent itself very satisfactorily to the use of dry-heat cure.

The other compound, higher in rubber (84 per cent), and the balance inorganic filler, gave better resistance to gas penetra-

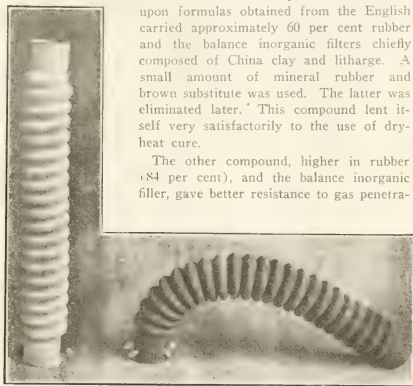


FIG. 9.—FLEXIBLE HOSE AND FLEXIBILITY TEST. NEW DESIGN AT RIGHT.

tion. It was not found as suitable for the dry-heat cure, however, as the rubber lost much of its life, but to the steam cure this type responded very satisfactorily.

RIGID FABRIC INSPECTION REQUIRED.

The early days of fabric manufacture were troublesome times for both the manufacturers and the Gas Defense Service. In the first place only the highest standards prevailed in the minds of the Army representatives and yet in the early days it was not possible to reduce this high ideal to an inspection basis which really eliminated vital defects while allowing those of no consequence to pass. This resulted in the rejection of much material which might have been used, as shown by later experience. Many meetings were held to discuss when a defect was not a defect, etc., without bringing the two interests any closer together. The question of rough spots, the importance of foreign material at the surface and embedded in the fabric, the border lines of pits or depressions, the tremendous effect upon the rubber film of knots and slugs in the cloth itself, all constituted a basis of real difference of opinion which was a matter of great concern.

Type samples of all kinds of defects representing rejects, border cases, and accepts were finally agreed upon and the basis of inspection reached was a visual inspection of each roll, yard by yard, and a tally of defects. If the number of defects did not permit the plant to get 85 per cent perfect blanks when

the roll was cut, the roll was rejected. The manufacturer then had the choice of taking the roll back or having it cut at his risk with payment arranged upon a pro rata of acceptable blanks to the whole.

ELECTRICAL RUBBER FABRIC TESTING MACHINE.

While this method did smooth out the problem, the Gas Defense plant (a government-operated assembly plant located at

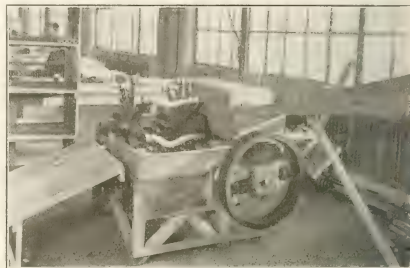


FIG. 10.—PRESSURE LEAKAGE TESTING MACHINE FOR FLEXIBLE HOSE.

Long Island City) recognized that many hidden defects might get by even the most rigid visual inspection and in turn visual inspection involved the never-constant human element. The plant therefore set about to eliminate this type of inspection and evolved the high-voltage electrical testing machine shown in Figure 4, which was entirely satisfactory. In this machine the fabric was passed between steel rolls which had an electrical potential difference of 4,000 volts. Any hidden hole, thin spots, pit, or embedded metal was broken down; the current arced through and burned a little circle which was its own rejection mark.

FABRIC MANUFACTURERS COOPERATE.

Mention has been made of the fact that knots and slugs in the cloth itself were a cause of trouble. This was true because



FIG. 11.—AUTOMATIC MACHINE FOR CUTTING ELASTIC HARNESS TAPE.

they became embedded in the rubber and made a thin spot in the film. The early days witnessed strenuous effort to improve the cloth used in gas masks. While a very fine cloth had been produced in this country for balloon work, no great

capacity was available and balloons and airplanes themselves were demanding enormous yardage to meet the wartime program. It was therefore necessary to work cooperatively with various cloth manufacturers in order that they might produce cloth to Gas Defense standards.



FIG. 12.—AMERICAN A. T. RESPIRATOR.

The problem involved more careful methods of yarn preparation, spinning, and the equipment of many hundreds of looms with automatic stop motions in connection with warp breakage. One manufacturer went so far as to start a spinning frame full-spooled and running through to the end, shutting down as the first spool ran out, and replacing throughout with new full spools. Thus the tied ends were eliminated. The less expensive method usually employed is to replace the spool and tie in a new end as each one runs out. This made by far the best fabric.

The No. 4 sail-cloth had a count of 110 in the warp and 116 in the fill, and a breaking strength of 50 pounds warp and fill in a one-inch strip.

EXHALATION OR FLUTTER VALVE.

This valve, see Figure 5, had to fulfil one of the most important requirements of all the parts of the respirator. It was necessary that it should allow the escape of exhaled air without too much resistance, and yet close instantly upon inspiration. It was required to show not over one inch of resistance at 120 liters per minute exhalation and a leakage of not over 10 cc. per minute when dry and at a pressure difference of one inch of water. In use, the valve became immediately wet with saliva which reduced its leakage to zero.

As originally made, the valve was wider and had a neck formed to fit the metal connection. Extensive experimentation revealed the fact that it was better to make the valve flat and narrower. When the flat neck was fitted to the oval connection, slight stresses were set up which tended to close the ports more tightly. The flutter valve was a source of great trouble for the manufacturers. The requirements were severe. Aside from the leakage test the valve was examined very carefully for holes, foreign material, gaping ports and dimensions. A part of this examination consisted in placing a rounded brass knob inside the valve, sliding and stretching the valve over the knob to bring to light any breaks, pits, or foreign material. This examination also showed any weak seams and edges. Seam construction gave a great amount

of early trouble, which was finally overcome by careful handling and adjustment of stocks. This valve had one weakness inherent in the design, which was not overcome during the whole experience. This was a weak edge where the two halves were joined at the sides. The weak edge resulted from the fold at this point and pressure during cure with a consequent loss in grain. It was undesirable because, when the valve was mounted, the solvent in the cement attacked the weakened tissue and often broke through.

The method of manufacture usually employed was to die out of sheet stock in single or double piece and then by making one or two seams and a fold, the make-up was ready for cure. Curing was done in soapstone or with slight pressure from plates. After cure, the valves were trimmed at neck and ports to dimensions. Specifications required not less than 85 per cent up-river fine Pará rubber, the remainder being sulphur and dry inorganic fillers. The use of organic accelerators was permitted upon application of manufacturers and upon evidence of satisfactory delivery. Large rejections took place at the manufacturing and assembly plants, and while constant effort was made to reduce rejections and much progress was made, yet the manufacturer was always obliged to reject many valves. To illustrate, there was an accepted delivery from all sources of 8,500,000 valves and it is estimated that 15,000,000 were made to yield this delivery.

Numerous attempts were made to replace this valve and many unique and interesting samples were submitted. All of them lacked some property which the standard valve possessed.

One of the most promising was submitted by Dr. Geer of The B. F. Goodrich Co. and was made up of two molded rubber parts and a cylindrical metal housing. One was a bell-shaped rubber piece joined to the housing and leading to the mask; the other, a nearly flat flange which rested against the bell-shaped part. This flange was mounted upon the base of the housing and contracted and expanded into a bellows, thus furnishing a delicate spring action to provide closure. The frame served to mount the two rubber parts, to protect them from damage, and to provide adjustment. The especially

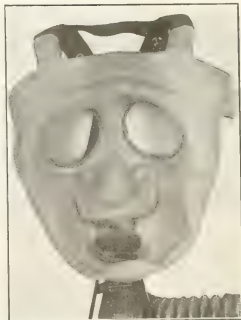


FIG. 13.—INTERIOR OF A. T. FACE-PIECE, SHOWING CLARIFYING TUBE AND CHIN REST.



FIG. 14.—GAS CHAMBER FOR TESTING MASKS.

desirable features of this valve were its compactness and very low resistance to exhalation, about one-quarter of that of the standard valve. There was not time after the valve had been perfected in design, to determine its durability and dependability

in the field before the signing of the armistice was announced.

FLEXIBLE HOSE.

The flexible hose, shown in figure 9, was used to connect the canister to the facepiece. It was originally made of 3/32-gage

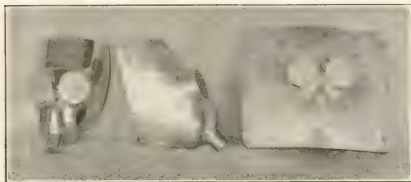


FIG. 15.—ALUMINUM A. T. MASK FORMS. TWO CURING FORMS AT LEFT. BUILDING FORM AT RIGHT.

rubber with spiral corrugations and covered with 5-ounce stockinet. It was made by placing tubed stock on a spiral corrugated mandrel, covering with stockinet, and wrapping with a cord. The make-ups were mounted upon racks and cured in open steam. This method yielded a product that was unsatisfactory from several standpoints. Rejections were high on account of interior folds or buckles and poor adhesion. The hose was not flexible enough. The English had used circular instead of spiral corrugations, and had secured greater flexibility. The early manufacturers tried several methods to make this hose and finally a molded method worked out by E. L. Stimson of the Mechanical Rubber Co., Cleveland, Ohio, was adopted. It consisted of a semi-cured rubber part which was covered with rubber-coated or cemented stockinet and then given a final cure to produce the necessary adhesion. First-cure and second-cure molds were therefore required and mandrels had to remain with their cavity. This process with the later use of stockinet knitted in a tube of proper size, was standard throughout the manufacture of the hose. Individual manufacturers worked out many clever labor-saving methods of applying stockinet, trimming ends, etc.

Many early troubles were encountered in the manufacture of hose involving correct corrugation design to produce flexibility, proper registration of molds and mandrels, pinching in final cure, and adhesion of stockinet. The hose was tested under water with five pounds' air pressure (Figure 10) and had to pass a flexibility test (Figure 9). The fabric adhesion on a two-corrugation section had to be at least four pounds at one inch per minute separation. It was necessary that the hose should not kink when bent double on thumb and forefinger.

MOUTH-PIECE.

The rubber mouth-piece (Figure 5) had to be designed to be as comfortable as possible in the mouth, to cause the minimum amount of salivation and to be tough enough to resist biting and chewing. Several improvements were made in the earlier design, involving a decrease in the flange which went between the lips and gums and the introduction of two corrugations in the neck to make greater flexibility and consequently less irritation to the mouth when running or walking.

The compound was similar to tread compound and called for 35 per cent plantation rubber and the balance sulphur and inorganic filler. The gravity was placed so high that it was necessary to make most of the balance of zinc oxide. No organic accelerator was permitted on account of the use of the mouthpiece.

Little difficulty was encountered in manufacture, once requirements were appreciated and mold equipment lined up and watched. It was necessary to use the same mandrel in the same cavity each

time to insure even wall thickness. Greater smoothness was obtained by tumbling.

NOSE PAD.

This was a small molded button provided with corrugations for fastening to the wire nose clip, and with concentric rings molded into the surface to come in contact with the nose in order to make the clip stay in place. The part contracted at the middle to a small diameter neck. This provided easy motion of the face of the pad to accommodate noses of different shapes. Two were furnished for each mask. The manufacture of this article was no different from that of any simple molded article.

DIAPHRAGM VALVE.

The diaphragm valve is a thin rubber disk designed to rest on a metal fitting in the bottom of the canister. Its use was to prevent exhaled air from passing out through the canister. This part was molded and little trouble was encountered in its manufacture. Some rejections were necessary on account of warpage and poor packing.

Eye-piece washers were made by the usual jar-ring processes, but a better composition was required. Thirty-five per cent plantation rubber was used, the remainder consisting of sulphur and dry inorganic fillers.

ELASTIC TAPE.

Elastic tape was used in enormous quantities for the head harness. Little trouble was encountered in the manufacture, but numerous changes in specifications were made necessary by changing conditions of gas warfare. At first it was necessary to wear the masks only a few minutes at a time. As soon as it became necessary to wear them for a longer period, it was found that the elastic was too strong in tension. This elastic had been made up in one-inch widths and each strand of rubber



FIG. 16.—OXYGEN INHALATOR FOR TREATMENT OF GASED SOLDIERS.

was protected against aging by a double thread winding. The tension was first reduced by using narrower tape and looser weaving and finally by omitting the winding of the original strands. A great many experiments on many heads revealed the fact that there was a very narrow limit in the stress strain properties of an elastic between comfort on one hand and safety on the other.

The purpose of the winding of the strand to protect from aging, caused an investigation of the properties of so-called black elastic thread as against the usual pure gum. All tests served to confirm that the black was more satisfactory,

but none was used up to the time of the armistice.

The specifications provided for twelve strands of No. 26 thread with a tension of 18 ounces at 5 per cent stretch and 36 ounces at 40 per cent stretch.

Elastic tape to the amount of 14,666,500 yards was delivered to the Gas Defense Division.

In the quantity handling of elastic tape for harness, an ingenious machine shown in Figure 11 was developed at the Gas

Defense plant which made it possible to cut to any predetermined length 100 lengths at one time. The machine once adjusted was practically automatic in its operation, and only required replacement of the rolls of tape.

THE A. T. RESPIRATOR.

The A. T. respirator mask (Figure 12) was one of the two in the process of manufacture at the time of the armistice. It was suitable for manufacture in rubber factories. The other one, known as the K. T. respirator, was a sewed and cemented face-piece and suitable for manufacture in the Gas Defense plant. They were the same from the standpoint of the user, and both were manufactured to obtain maximum production.

The letters "A. T." are an abbreviation of the name "Akron Tissot." This name was used because the mask made use of a principle first used by a Frenchman named Tissot and the development largely took place at Akron. This mask was designed to meet the rapidly developing requirements of gas warfare. The use of mustard gas by the Germans (this gas often persisted in the ground from one to two weeks and continued to give off toxic concentrations) made necessary long wearing of masks—often ten to twelve hours. This was impossible with the standard mask; at least with many individuals, the discomfort of the nose clip and mouth-piece and the pressure of the face-piece became unbearable.

Mustard gas is most insidious. A man can be exposed to the vapors for twelve hours and hardly be conscious of its presence, with no apparent ill effects, and then, a day or two later, conjunctivitis of the eyes, lung tissue destruction and body burns will develop. As a result of these conditions, many soldiers would not wear their masks a long time in mustard gas or would use only the mouth-piece, and eye trouble developed later.

In addition to the above considerations, the vision obtained from the regular mask was not altogether satisfactory. The moisture from the face condensed upon the eye-piece and in spite of anti-dimming compounds (not always used) it was necessary when wearing the mask repeatedly to wipe the inside of the glass, by making use of a pocket in each side of the face-piece. Therefore, the problem of design involved was to achieve much greater face-piece comfort, to eliminate the nose clip and mouth-piece and make better vision possible.

Much preliminary work had been done by the Bureau of Mines along these lines and in April, 1918, a model was turned over to the Gas Defense Service. It was hand-made of sheet rubber, reinforced and protected by stockinet on the outside, provided with harness of pure gum straps and arranged to lead all incoming air against the inside of the eye-pieces before it was breathed by the soldier. This arrangement (the Tissot principle) kept the eye-pieces comparatively free from moisture and with the use of anti-dimming compound, practically perfect vision resulted.

While this model embodied the desirable elements, much development work was necessary before all requirements could be satisfied. Accordingly, arrangements were made in April to carry on this work at the plants of The B. F. Goodrich Co. and The Goodyear Tire & Rubber Co. in Akron.

By July 1, 1918, a model had been developed which eliminated some of the defects of the early designs. These improvements

included better vision, better stretch of the stockinet in each direction, less pressure on the forehead, elimination of pressure upon the nose, improvement in harness, and reinforcement of the lower face-piece to prevent collapse when breathing. These improvements were made as a result of tests upon soldiers in gas and upon advice of the American Expeditionary Force, which had been supplied with samples as they were developed. The two rubber companies built splendid gas chambers at their plants and thus afforded immediate facilities for testing. As an indication that this mask more nearly met requirements, a quotation from an American Expeditionary Force cabled report is given: "Six men wore these masks continuously for 29½ hours and took them off only because ordered."

During May and June a production of the earlier model was started in order to have production facilities available when the final design was adopted. The early method of manufacture was to cut the sheet stock to a flat pattern, apply the stockinet, build in semi-cured lens frames, form the seam under the chin, reinforce the edges with gum strips, and cure on an aluminum form in open steam with or without wrapping. This method yielded fairly satisfactory results on the earlier models, but in

the final design the amount of contact with the face had been sacrificed to obtain comfort and therefore dimension requirements had to be fulfilled within close limits. The method described did not yield a good product within these limits.

The period of July to October was employed in overcoming manufacturing difficulties which included the following:

1. The procurement of standard dimension curing forms in the necessary sizes. (See Figure 5.)

2. The procurement of lens frame molds which would yield the proper design of semi-cured rubber lens and

hold the register and gage.

3. The development of manufacturing methods which would yield a product satisfactory in dimensions.

In connection with No. 1 the pattern makers found it difficult to make proper allowances for shrinkage in making the aluminum curing form. It was necessary to change the source of supply several times.

With respect to No. 3, the rubber industry showed remarkable fertility of ideas and ingenuity of method with regard to methods of manufacture. It would require the space of a whole article in itself to describe the methods involved. Contracts were let to different companies and as many methods were employed. The wrapped cure was adopted in one way or another throughout. Some obtained results with one cure and by use of templates and guides attached to the curing form, which confined the flow of stock and located harness tabs. Others used variations of the two-cure process in which trimming was done after semi-cure and correct dimensions thus secured. Ingenious diaphragm and air-bag curing methods were employed and at the time of the armistice the mold mask began to show promise. The Aluminum Company of America worked out aluminum molds by successive casting of wax, plaster of Paris, cast iron, and aluminum. This method, in the opinion of the writer, will have a more general use for various irregular shapes which may be needed by the industry.



FIG. 17.—ANALYTICAL RUBBER LABORATORY, LONG ISLAND CITY, NEW YORK.

Other rubber parts used in the A. T. mask included a clarifying tube, a Y-shaped tube leading from the die casting and delivering air from the canister through its two branches to the eye-pieces.

The chin rest shown in Figure 13 was a molded rubber part composed of a sponge-rubber face and a soft rubber back-plate, for fastening to the die casting. The surface of the sponge rubber was made smooth in the molding. The soft rubber and sponge were molded separately and cemented together. Production of these two parts was obtained in large quantities with little trouble. Altogether, complete parts were furnished for 364,000 A. T. masks up to the time of the armistice.

THE K. T. TYPE RESPIRATOR.

This mask was developed at the Gas Defense plant to meet the same requirements as outlined in describing the A. T. respirator. It was made up by sewing and cementing stiff fabric and rubberized stockinet to a frame similar to the frame in the old-type masks. It contained many improvements in harness and fit which led to comfort. Air was deflected upon the eye-pieces by a molded rubber shield. Altogether, 338,000 of these were manufactured in the plant up to the armistice, over half of which were suitable for overseas use and the balance for soldiers in the training camps.

A stiff and gas-resisting fabric was needed to give body to the mask which would otherwise collapse against the face with each individual. Experiments were made to develop a stiff and impermeable fabric which was demanded by this type. Several constructions were developed. One involved the use of one ply of enameling duck impregnated with semi-hard rubber joined by cement to a ply of the regular gas-mask fabric. Another used a preliminary stiffening treatment of the duck followed by rubberizing and doubling with the regular fabric. The last named method produced the most satisfactory fabric, giving great elasticity, yet sufficient stiffness for the purpose, for which it was intended.

HARD RUBBER ANGLE TUBES.

The angle tube (see Figure 5) was ordinarily made of aluminum by the pressure-die-casting method. This process required complicated dies and cores, and in the spring of 1918 it became evident that the capacity available was not going to be sufficient for the needs, and attention was directed to the possibility of hard rubber as a material.

The various hard rubber companies cooperated in the development of this article and, working with the Rubber Committee, developed specifications. The great question to be determined was the degree of hardness desirable and whether or not the threads would stand temperature changes. Tests were made in great numbers in cold storage and in warm weather to decide points in the specification. The merits of various methods of manufacture were discussed in meetings. The consensus of opinion of the Rubber Committee in conference with manufacturers and Gas Defense representatives was that hard rubber as a material was satisfactory for use but not as satisfactory as metal. The 700,000 deliveries of this product justified this conclusion, as much trouble was encountered due to variation in hardness and in dimensions. Some were so soft as not to permit assembly to masks.

Other materials furnished by the rubber industry included zinc-oxide adhesive tape, rubberized felt for the bands of the R. F. K. type mask, strapping for covering sewed seams on the K. T. mask, rubberized stockinet for the K. T. mask, and molded rubber air deflectors for the K. T. type mask. Several thousand oxygen inhalers (Fig. 16), were shipped overseas for use in treatment of gassed soldiers. The rubber parts involved in this equipment included a face mask of metal fitted with a pneumatic rubber cushion, a flexible armored rubber hose, and a rubberized fabric breathing bag to regulate pressure.

REGARDING SPECIFICATIONS.

The policy followed by the Gas Defense Division in harmony with the advice of the Rubber Committee was to use only the best materials throughout. Organic accelerators were barred from general use for two reasons: (1) certain parts were in contact with the mouth or face and (2) the use of these accelerators by the trade was new and not fully developed. In the case of the A. T. mask and parts in contact with the face, lead compounds were not permitted. This was due not to the knowledge that lead poisoning could be transmitted in this manner, but to the knowledge that skin irritations were liable to develop in

some cases from heat and contact, and it was not considered advisable to have a discussion as to the effect of lead in such cases. This requirement made a difficult compounding problem for the manufacturer, especially since a non-blooming product was desired.

Reclaimed rubber was not permitted in any product. This was not because of failure to realize that reclaims could be used successfully, but because it was considered difficult to write specifications which would amply protect the Government on products which had to be put into use immediately for a vitally important purpose. That the policy followed in writing the specifications was justified, is proved by the results shown

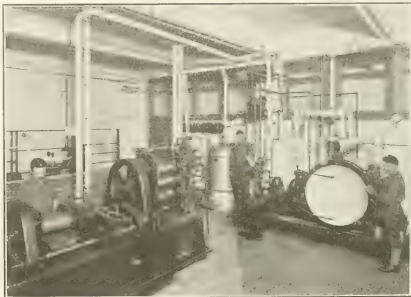


FIG. 18.—RUBBER WORKSHOP, LONG ISLAND LABORATORY, LONG ISLAND CITY, NEW YORK.

by the product. There are no reports which indicate that the rubber goods furnished in our gas masks were unsatisfactory at the start or after use. The writer personally inspected a salvage dump of masks in France, and with one exception, found no evidence of rubber failure from aging. There was, in the case of the flutter valve, which when mounted on the metal fitting was stretched by the bead, a tendency to surface check, but this served merely to support a well-known fact that rubber, when placed under continued tension, does not age well.

SPECIAL RUBBER LABORATORIES.

Laboratories were established at Akron and at each assembly plant for the purpose of determining the fact of compliance with specifications. In all these laboratories physical tests were made on cured slabs and upon the articles themselves. The Akron laboratory was in charge of an experienced rubber man and cures were checked on all deliveries. The institution not only was of value to the Government but often saved contractors losses on off-cure articles which had not been caught by regular inspection.

At Long Island City a chemical laboratory was equipped to perform chemical analysis of the rubber products. One sample of each article from each manufacturer was analyzed every month. It is gratifying to state that this check revealed no attempt on

the part of the manufacturer to deliver products that were not within the specifications. At the Long Island laboratory there was established an experimental rubber workshop, which furnished immediate service on rubber needs of the Gas Defense Division. It was equipped with a combination mill, calender, presses, and dry-heat, steam, and vacuum vulcanizers.

THE ACCOMPLISHMENT OF UNSELFISH COOPERATION.

The problem of supplying our soldiers with satisfactory gas defense equipment was a start from nothing, so far as knowledge in this country at our entrance into the war was concerned. Time and production were the key-notes. It called for much designing and many kinds of materials, and the rubber industry can be proud of the way in which it responded to the call. Fullest cooperation in development and production was given by every manufacturer involved. The proportion of development effort to production was so great and changes were necessarily so frequent that it can be said that the industry made no great war profits from gas-mask materials. In the matter of development cooperation it is desired to mention especially the work of Dr. W. C. Geer of The B. F. Goodrich Co. He became interested early in the great problem of gas defense and its tremendous possibilities; and gave unstintingly of his time in the solution of these problems. His ideas were a constant source of inspiration to the Service. Among the things which he produced was a better gas-mask fabric, a lower resistance exhalation valve, a telephone mask and a fighting mask which embodied the Akron Tissot principle, combined low resistance, and provided a carrying position of canister on shoulder away from chest, thus permitting the soldier to carry on offensive operations more successfully.

RUBBER TRADE INQUIRIES.

THE inquiries that follow have already been answered; nevertheless they are of interest not only in showing the needs of the trade, but because of the possibility that additional information may be furnished by those who read them. The editor is therefore glad to have those interested communicate with him.

(697.) A correspondent in Argentina requests catalogs and price-lists of druggists' and surgical sundries, with the object of securing the agency for these goods.

(698.) A subscriber requests the addresses of manufacturers of molds for rubber toys.

(699.) A subscriber desires information concerning Ruberine as a compounding ingredient.

TRADE OPPORTUNITIES FROM CONSULAR REPORTS.

Addresses may be obtained from the Bureau of Foreign and Domestic Commerce or its district or cooperative offices. Request for each should be on a separate sheet, and state number.

(28,206.) An Englishman desires to import from America material and machine tools for manufacturing automobile tires and other rubber accessories.

(28,209.) A firm of brokers and agents in Ireland desires to communicate with exporters desiring direct representation in that country.

(28,210.) A Cuban desires to represent manufacturers of cotton goods, including ducks and drills.

(28,217.) An Italian desires an agency for traveling goods, imitation leather, etc. Correspondence should be in Italian. References.

(28,218.) A retail house in India desires to purchase sporting goods, motor tire tubes, motor cars, cycles, and accessories. Payment at Madras through bank. Will consider agency proposition. References.

(28,229.) An Italian concern desires an agency for boots and shoes, tools and machinery for their manufacture and repair,

rubber goods, waterproof clothing, etc. Cash or '30 days' credit against security. Correspondence may be in English. References.

(28,233.) A firm in India desires to purchase erasers and other stationery. Quotations to be f. o. b. An agency for such supplies is also desired. References.

(28,235.) A Swedish firm wishes to buy rubber handles for cutlery, etc. Correspondence may be in English. References.

(28,242.) A commercial agent in Denmark desires an agency for rubber goods and other articles. Cash against documents. Correspondence may be in English. References.

(28,289.) A Norwegian firm desires an agency for the sale of rubber goods. Correspondence may be in English.

(28,312.) A Mexican firm desires to purchase screw bottle stoppers made of caoutchouc or gutta percha like samples to be seen at the offices of the Bureau. (Refer to Miscellaneous, No. 205.) These were formerly made in a European country.

(28,319.) A man in India desires to communicate with exporters for the sale to merchants in India of rubber tires.

(28,320.) A firm in Denmark desires to purchase and also secure an agency for tires for motor cars and lorries. Quotations f. o. b. New York. Terms, cash. Correspondence may be in English.

(28,323.) A Swedish firm desires to purchase belting, packing, etc. Correspondence may be in English.

(28,338.) A business man in Denmark desires to secure an agency on commission for the sale of rubber goods. Correspondence may be in English.

(28,352.) A Canadian desires to secure an agency for the sale of druggists' sundries. Quotations f. o. b. destination.

(28,255.) An Englishman desires an agency for the sale in Belgium of rubber heels and soles and leather substitutes. Terms, cash payments.

(28,376.) A French firm desires an agency for the sale of sporting goods. Correspondence in French.

(28,393.) A commercial agent in Algeria desires to secure an agency for the sale of rubber articles. Correspondence in French.

(28,394.) A man in Switzerland desires an agency for the sale of insulating materials, belting, etc. Correspondence may be in English.

(28,408.) An Italian desires to secure an agency for the sale of rubber goods. Correspondence may be in English.

(28,244.) A Canadian concern desires an agency for the sale of rubber goods.

(28,247.) A Norwegian firm desires to purchase supplies for the manufacture of waterproof clothing, sporting goods, etc. Quotations f. o. b. New York. Payment against documents. Correspondence may be in English.

(28,280.) A man in England desires to communicate with manufacturers of rubber footwear.

(28,253.) A Norwegian firm desires to purchase 100 cravantes and 100 spring raincoats.

(28,260.) A Swedish importer desires to purchase rubber goods. Correspondence may be in English.

(28,287.) An Australian firm desires agencies for the sale of gums, resins, waxes, waterproofing compositions, rubber goods, etc. Catalogs, price lists, and particulars are requested.

POLISH COMMERCIAL AND INDUSTRIAL BUREAU.

Early in January the Commercial and Industrial Bureau of the Polish National Department was opened, with the object of assisting to establish commercial connections between the United States and Poland to collect and disseminate all necessary data and information for the success of this purpose.

The Bureau will be glad to furnish information concerning trade conditions and business possibilities in Poland to those interested. The offices of the organization are at 1032-1035 Aeolian Building, 33 West 42nd street, New York City.

Echoes of the Great War.

ADELBERT H. ALDEN IN WAR WORK.

FOR nearly four years Adelbert H. Alden has been engaged in war work in Europe, and when the United States entered the war he became interested in providing entertainment and caring for the American soldiers passing through London. When the American hospitals were established there both Mr. and Mrs. Alden devoted much of their time to the care of wounded Americans.



ADELBERT H. ALDEN.

In response to an invitation from a friend to spend Christmas in the States, Mr. Alden wrote:

We would desire to eat our Christmas dinner with you in the States, but there are some things which make it impossible. I feel I am of service here in the hospitals—at least for a time longer, as some of the wounded men seem to depend on me and I don't like to desert them, for when I have spoken of leaving them for home their words and manner have touched me deeply and I simply cannot do it. However, this condition of affairs

will probably not continue very long, for the wounded are being evacuated back to the United States very rapidly and soon there should be none left here. They are the very finest lot of young men I ever saw.

In a later letter Mr. Alden writes:

Our hospital work is finished. All our wounded friends have departed and we plan to sail for home March 15th.

WHAT THE WESTINGHOUSE COMPANY DID TO HELP WIN THE WAR.

In a recent interview General Guy E. Tripp, who during the war was assistant to the Chief of Ordnance at Washington, D. C., but has now returned to his duties as chairman of the board of the Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pennsylvania, spoke enthusiastically of the aid the Government received during the war from the men and women who make up our great commercial organizations. As an example, General Tripp pointed out the valuable contributions to the winning of the war which have been made by the Westinghouse organization and employees.

Not only did an army of 7,468 men, or about 20 per cent of the company's employees, go forth to fight, but a loyal industrial army of nearly 40,000 remained to operate the company's several great plants day and night, turning out vast quantities of war munitions of many sorts. Works, machinery, and workmen were turned over to the Government, including the services of inventors, engineers, chemists, and innumerable specialists. And when greater factory capacity was required, a plowed field at South Philadelphia, Pennsylvania, was, in less than a year, converted into a fully equipped industrial plant embracing seven large buildings and employing over 2,000 persons.

The Westinghouse organization also did much to assist financially in the campaign for Liberty Loans, Red Cross and United

War Work Funds. The company and employees joined hands and the results are most gratifying. The employees alone subscribed for a total of \$10,500,000 of Liberty Bonds, the company subscribing for \$8,000,000, making a total of \$18,500,000, or 1.08 per cent of the four Liberty Loans.

In the civilian personnel furnished the Government were a number of prominent men who performed invaluable services along their chosen lines. Among these might be mentioned, Benjamin G. Lamme, chief engineer, who was appointed by the Secretary of the Navy as a member of the Naval Consulting Board; vice-president L. A. Osborne, a member of the War Labor Board; Frederick Darlington, consulting engineer, head of Power Section of War Industrial Board—and many others doing equally important work.

THRIFT IN 1919.

The Government has taken steps to provide for a new issue of War Savings Stamps for 1919, similar to those put out during 1918. The new ones, however, are to be kept on special cards or folders and not combined with those of 1918. Similar rates are also announced, a War Savings Stamp in March, 1919, costing \$4.14, and one cent additional during each subsequent month. The same kind of Thrift Stamps are being issued as were put out in 1918. Thrift Stamps purchased during 1918 may therefore be applied on War Savings Stamps of the current issue.

HOLD YOUR LIBERTY BONDS LOYALLY.

In connection with the buying of War Savings and Thrift Stamps and Liberty Bonds, the new Secretary of the Treasury, Carter Glass, deprecates the tendency in some directions to sell Liberty Bonds already acquired. He especially censures the exchange of these bonds, the best security in the world from the point of view of investment, for other securities of doubtful and sometimes worthless value, or for unnecessary purchases. He makes the point that as long as the Government needs to sell bonds, those who hold the present issue will show their unimpaired loyalty by retaining them except under the spur of the most urgent necessity. In such a circumstance, with the bonds as security, the best method of procedure is to negotiate a loan from some reputable bank, to be repaid later. The bond owner who disposes of his bond for cash outright does not help the Government, and perhaps the best test of his real loyalty and thrift lies in his ability to continue to practice self-denial and not purchase the small luxuries which the money to be obtained from the sale of a Liberty Bond would make possible.

EXPORTATION OF AUTOMOBILES AND BICYCLES TO DENMARK, NORWAY, SWEDEN AND HOLLAND.

In a new ruling (W. T. B. R. 588), the War Trade Board announces that in shipping automobiles and bicycles to the above countries, it will no longer be necessary to furnish with the application for export license an import certificate number covering the tires on such vehicles. The import certificate and export license issued for automobiles and bicycles will be deemed to include the necessary tires.

RESUMPTION OF TRADE WITH SERBIA AND ROUMANIA.

Trade with Serbia and Roumania has been resumed, subject to the rules and regulations of the War Trade Board, and applications for import or export licenses for all commodities will now be considered. Applications for export licenses should be filed on Form X or X-a. No supplemental sheets are required for rubber goods. As the import regulations of these countries are unknown, prospective exporters should communicate with their customers before making shipments, in order that the importer may comply with the requirements governing imports to Serbia and Roumania.

SON OF GEORGE B. HODGMAN HONORED IN FRANCE.

Corporal Alfred P. Hodgman, of the United States Army Ambulance Service Attached to the French Army, has recently been decorated with the Croix de Guerre for bravery during one of the German offensives last summer when he advanced beyond the front lines and rescued several wounded French soldiers. He is the second son of George B. Hodgman, president of the Hodgman Rubber Co., Tuckahoe, New York.

MR. KIRK, BOXING INSTRUCTOR.

More and more it is becoming evident that the men who toiled "behind the lines" did as much to win the war as those who went over the top. A case in point is that of the manager of the New York office of the Thermoid Rubber Co., J. N.

Kirk, Jr. Always interested in athletics, and a splendid boxer, he was called upon early in the game to train recruits in the manly art. So successful was he that all of his spare time and much that was not to spare was given up in showing the embryo soldiers how to account for themselves with credit when brought face to face with opponents of any caliber.

Although the armistice is signed, Mr. Kirk finds that when he is not selling rubber goods he is still called upon to continue his training work.

Incidentally he has learned that this extra work has been of great advantage to him. A 260-pounder at the beginning he now weighs 185 pounds and, as he explains it, instead of feeling fatly good-natured he is all of the new fitly good natured.

MARTYRS TO THE CAUSE OF LIBERTY.

THE total number for former employees of the United States Rubber Co. and associated companies in military service was 4,298. In all, 49 casualties have been reported, as follows: killed in action, H. Bartlett, Stanley Dublinski, Stanley Rikeski, George Lawson, T. F. Deady, Epim Vorasoks, Salvatore Missri, Henry Pappagallo, G. A. Waldo, L. E. Richardson, J. F. Potter, Antoney Spino, F. Charles, James Mosher, R. Dulmage, T. F. Ryan, S. H. Young, M. D. Bacon, M. F. Cassidy; died of wounds, A. N. Allyn and Olaf Flink; died of pneumonia, influenza, accident and other causes: M. Bickerdike, Loren Smart, S. A. Charles, J. H. Johnson, John Wasnick, George Shetler, M. Esikovich, R. MacDonald, J. Kerber, E. Whynott, H. Klein, Fred Cummings, Ira Valentine, Joseph Green, O. P. Friend, H. B. Bragdon, W. P. MacDonald; missing in action: N. Carabillo, F. G. Swan, C. H. Drechsel, T. McDonough; wounded, J. Marinitis, F. N. Champoux, J. W. Townsen, T. Farrell, O. Schaeffer, F. E. Topping, H. Fahrenholz.

Private C. Puerto, of the 316th Infantry, who was formerly employed in the carton department of the L. Candee Co., New Haven, Connecticut, has been killed in action.

RUBBER TIRES AND CLOTHING FOR NORWAY, SWEDEN, HOLLAND AND DENMARK.

The Allied Governments have materially increased the quantities of commodities allowed to be imported by Norway, Sweden, Holland and Denmark. All quantity limits have been removed from rubber tires, clothing and machinery. These commodities may now be licensed freely, subject only to the condition that appropriate import certificates have been issued. Exporters should request their customers in these countries to apply for such certificates.

INTERESTING LETTERS FROM OUR SOLDIERS.
SOLDIERS TO CARE FOR STILL.

THAT there are soldiers who still need and appreciate gifts from the home folks is vividly shown by the letter that follows. It was written to a member of the staff of THE INDIA RUBBER WORLD who, through a friendly colonel, discovered a private without kith or kin and "adopted" him as far as sending cheering letters, tobacco, books, magazines, etc. There are others and they "sure appreciate" attention.

ON THE MEXICAN BORDER.

DEAR FRIEND:—Received your package of soap, tobacco and papers. I don't understand how you happen to understand my needs, but you come to the rescue every time. We happen to be so far from civilization that there's hardly an essential within fifty miles of this place. Last Saturday when your package arrived there were only about six smokers left in our crowd and those went after breakfast, and just think of it, we didn't have a smoke until three o'clock that afternoon when the mail arrived and I received the package. I don't believe a soldier ever received a package that was more appreciated than that one and also the magazines—the boys just went loco over them. I guess you know how much I thank you.

I asked the Captain if I could do a little trapping during my spare time and he said I could. As there are grey fox and coyote in these parts you see I will have something to do to relieve the monotony.

It may be six months before we get a discharge from this district and so I am still in hopes of another good scrap with the "Spicks." We feel a little bit as if we had done our "bit" and knowing that our regiment has guarded almost 2,000 miles of the Mexican border line, perhaps you will realize our task is no small one. I'd do ten years more in service just to be able to show those "Spicks" a good cleaning up.

This place is sure some place. It is 105 miles from the railroad, right on the edge of the desert, a town of about 300 people, most of them miners, and a sort of a supply base for the troops on the river. The mails go out but once a week by motor stage. When we first arrived my old job of "skinning mules" was mine again and I had some great trips across the desert for supplies, usually all-night trips, and it sure was some cold.

When I get my discharge I hope to join the Government Ranger Forces on the border, and have already sent in my application.

I've got to close as I have to get about my duties. Thanking you again for your many kindnesses,

Respectfully yours,

MORE ABOUT THE THIRD BORDEAUX SAMPLE FAIR.

Literature concerning the Third Bordeaux Fair, to be held in Bordeaux, France, from May 31 to June 15, 1919, which has been received by the Bureau of Foreign and Domestic Commerce and its district or cooperative offices (refer to File No. 110760a), includes (a) application blanks for participation in the fair; (b) sample contracts for advertising space in the official catalog; and (c) pamphlets describing the plan of the buildings and their location on the Place des Quincones, together with data relative to accommodations, etc.

John M. Chapman, 101 Park avenue, New York City, is the official representative of the fair in this country, and further information may be obtained from him.



JOHN N. KIRK, JR.

What the Rubber Chemists Are Doing.

COMPARATIVE METHODS FOR DETERMINING THE STATE OF CURE OF RUBBER.

A VALUABLE paper by Henry P. Stevens on comparative methods for determining the state of cure of rubber, appeared in the "Journal of the Society of Chemical Industry," August 31, 1918, page 280r. Tabulated data of physical tests and curves are given, showing the relationship of the coefficient of vulcanization to breaking load and time of cure for ordinary crepe and smoked sheet.

The state of cure or degree of vulcanization of rubber may be formulated in reference to (1) the percentage of combined sulphur calculated on the rubber present, which is the coefficient of vulcanization; (2) the physical properties of the vulcanizate, particularly the load supported per unit cross-sectional area at a given elongation or *cure curve*. The former method is independent of the age and external conditions of the vulcanizate, while the latter is dependent on these conditions. It is therefore necessary to make a careful comparative study of the coefficients and the corresponding physical properties under varying conditions before the latter can be taken as a measure of the condition or state of cure. I have already shown that the physical properties are dependent on the age of the vulcanized specimen,¹ so that comparable results are only obtainable when the specimens are tested at a fixed period subsequent to vulcanization. The present results show that the temperature also has a considerable influence on the physical properties, and uniform conditions must be observed in order to obtain comparable figures.

SUMMARY.

The position of the stress-strain curves is appreciably influenced by the period elapsing between vulcanizing and testing the rubber and by the temperature. Hence, the results are only comparable when these conditions are kept constant. Results obtained in summer are not comparable with those obtained in winter, nor those obtained in the tropics with those obtained in Europe.

The position of the stress-strain curves is influenced by the type of rubber, that is, whether crepe or sheet, probably owing to a variation in the proportion of non-caoutchouc ingredients.

The coefficient of vulcanization is independent of the above and other conditions and is therefore a more reliable index of the rate of cure. In any case, if the stress-strain curves are to be taken as an index of the state of cure, it is essential that these curves be obtained under standard conditions.

Of particular interest is the greater curvature of the graphs for crepe from matured coagulum than of those for ordinary crepe and sheet. This may be attributed to the larger proportion of accelerating base contained in the former.

To insure as great a degree of uniformity as possible, all specimens should be tested as soon as possible after vulcanization, for instance, the next day; and between vulcanizing and testing, the specimens should be kept as nearly as possible at 30 degrees C.

VULCANIZATION RESEARCHES.

B. J. Eaton summarizes the vulcanization researches of the chemical laboratory of the Agricultural Department of the Federated Malay States for the first half of 1918, as follows:

The principal investigation has been on the effect of different alum salts used as coagulants. The writer has previously shown that common potash alum, when used as a coagulant, has a very deleterious effect on rubber, especially in regard to its effect on the rate of cure. The subject is of considerable importance since, owing to the rise in price of acetic acid, the use of alum by Asiatic small holders has increased considerably, and the result, with the comparatively large amount of rubber from such holding now being manufactured, may give a bad name to plantation Pará rubber. American manufacturers, who have been large buyers of rubber from such sources on the Singapore market, have previously drawn attention to the subject.

The present investigation was carried out to ascertain whether

the different alum salts had a similar effect and the result of the investigation has shown that such is the case. The effect of the following alum salts was investigated: potash alum (pure), commercial potash alum, soda alum, ammonia alum and aluminium sulphate. The use of alum salts generally as coagulants should therefore be discouraged.

The effect of alum as a retarding agent in vulcanization, and of some other substances, namely, mineral acids, has not yet been investigated on a scientific basis with a view to ascertaining whether the effect is due to the bactericidal or anti-enzyme action of these substances or their effect as direct negative catalysts in vulcanization. Experiments with certain other reagents, described below, indicate that these substances behave directly as negative catalysts or retarding agents in vulcanization.

EFFECT OF CERTAIN CHEMICALS WHEN ADDED TO FINISHED DRY RUBBER.

When used as coagulants the various salts or acids may retard vulcanization by virtue of their bactericidal action on the organisms or enzymes which bring about the changes in raw rubber during the maturation period of six to seven days. By adding these chemicals, however, to the finished rubber, any effect must be due to a neutralization of the effect of the natural accelerator or to a direct negative effect of the chemical added.

The following substances have so far been tested in this manner: starch (as a neutral organic adjunct), boric acid, tannic acid, molybdic acid and phosphotungstic acid used as precipitants of proteins, amines and basic nitrogenous compounds. All of these substances, with the exception of starch, when added to the extent of one to two per cent of the rubber-sulphur mixing, had a very marked effect in retarding vulcanization, both in the case of "slab" crepe and crepe samples. Generally the larger amount had a greater effect than the smaller, and the effect appears to be specific, that is to say, the vulcanization of the "slab" crepe is retarded to a certain extent, but is not as slow as the slow-curing crepe which had been treated similarly. Rubbers having different rates of cure due to different amounts of the natural accelerators present, are not all brought to the same degree of slowness in the vulcanization.

DETERMINATION OF UNCOMBINED RUBBER IN RECLAIMED VULCANIZED RUBBER.

The following method is that of André Dubosc in "Le Caoutchouc et la Gutta-Percha," November 15, 1918, page 9646.

The value of a reclaimed rubber depends on the amount of caoutchouc it contains in free or uncombined condition. The following method of analysis requires certain precautions and considerable care, but gives very exact results.

APPARATUS FOR CHLORHYDRATION.

The sample for analysis reduced to 120-mesh fineness which may be done easily after swelling it in a mixture of the tetrachloride and sulphide of carbon and drying at 60 degrees C. before sifting. Ten grams of the powdered sample is weighed for chlorhydration. This is placed in a flask provided with two tubulures, one of which is connected to a source of cold, dry, hydrochloric-acid gas, and the other to an absorption flask containing a solution of caustic soda or milk of lime and connected to a vacuum pump to facilitate the passage of the gas through the sample. Cork stoppers boiled in paraffine are used to close the tubulures and the inlet and outlet gas tubes pass loosely through them to permit rotating the flask for the purpose of exposing fresh surfaces of the powdered rubber to the action of the gas. The lower part of the gas flask is cooled in water or a freezing mixture to prevent overheating the mass. A double-walled container or any water-sprinkling arrangement may be used for cooling. The temperature of the powder is not allowed to exceed 30 to 35 degrees C.

¹"Journal of the Society of Chemical Industry," 1916, page 872.

The apparatus for generating the hydrochloric gas consists of a double tubular flask containing hydrochloric acid at 22 degrees Beaumé. To one of the tubulures is attached a funnel with an S-bend for safety against back pressure of the gas forcing out the supply of sulphuric acid contained in the funnel.

The length of the branches of the S-bend may be 15 to 20 centimeters. For drying the gas the second tubulure of the apparatus connects with two tubes containing broken pumice wet with sulphuric acid, and with a gas washer filled with fuming sulphuric acid. The gas generator is stoppered with paraffine-boiled, tinfoil-covered cork stoppers and sealed with paraffine. Sulphuric acid (66 degrees Beaumé) is delivered from the funnel, drop by drop, into the dilute hydrochloric acid in the flask. The hydrochloric gas disengaged carries along a little hydrochloric acid and moisture. The latter is retained by the pumice, which serves as a gas filter and dehydrator. The gas produced should not react blue on powdered copper sulphate. The passage of gas through the powdered rubber is easily controlled by regulation of the vacuum connection with the flask and absorption train. The application of vacuum is made cautiously so that the sulphuric acid will not be drawn into the generator abruptly. The difference in level should not exceed two to three centimeters of mercury in order that the contact of the gas with the powdered rubber may be as prolonged as possible.

CHLORHYDRATING EFFECT.

The action of the gas on the rubber liberates some heat. This temperature is not allowed to exceed 35 degrees C. The chlorhydration reaction proceeds slowly, and if the temperature rises, the mass tends to become sticky at 35 degrees C., the powder becomes a little tacky but does not unite enough to prevent passage of the gas.

Complete chlorhydration requires 24 hours. The product obtained is nearly white and retains its elasticity. It is removed from the flask, washed with warm water, then with cold, until the wash water is free of acid. Next follows washing with warm alcohol, then with cold alcohol, drying at 60 degrees C., and cooling in a desiccator. The rubber is then in the form of an easily pulverizable white powder, insoluble in alcohol, ether, acetone, benzene and sulphide of carbon. It consists of a mixture of three chlorhydrates of caoutchouc: (1) chlorhydrate of polyprene sulphide, (2) chlorhydrate of stable (vulcanized) caoutchouc, (3) chlorhydrate of metastable (unvulcanized) caoutchouc, or caoutchouc in its natural state. The first two forms are completely insoluble in chloroform, while the third is completely soluble.

SEPARATION OF CHLORHYDRATED PRODUCT.

There are three different methods by which the amount of unvulcanized caoutchouc in the sample may be determined.

1. A known weight of the dry chlorhydrated material is treated with chloroform and the insoluble residue dried at 60 degrees C., cooled in a desiccator, and weighed. The difference between the two weights gives that of the chloroform soluble chlorhydrate or unvulcanized caoutchouc. The formula for this chlorhydrate is $C_{10}H_8Cl_2$, therefore 1.99 grams of the chlorhydrate correspond to 1.36 grams of caoutchouc.

2. The unvulcanized caoutchouc may be similarly calculated from the weight of dry residue obtained by evaporation of the chloroform extract.

3. The dry chlorhydrate, if treated on a water-bath with pyridine or pyridine bases, gives up its hydrochloric acid and assumes the gummy state of unvulcanized caoutchouc. Aniline has the same reaction, but the unvulcanized caoutchouc is partly soluble in it, necessitating precipitation. The use of pyridine is the more practical, as follows: the chlorhydrate of unvulcanized caoutchouc is extracted for six hours with 100 cc. of pyridine, using a reflux condenser. The caoutchouc,

which floats as white threads in the liquid, is received on a tared filter; to the filtrate is added twice its volume of acetone to precipitate the dissolved caoutchouc. The residue is washed with hot and with cold acetone, then with 95 per cent alcohol, dried at 60 degrees C. in vacuum, cooled in a desiccator, and weighed.

The caoutchouc thus separated has all the characteristics of the natural gum. It is elastic, slightly sticky, easily erases pencil marks, and dissolves completely in all the usual caoutchouc solvents forming viscous solutions.

Before making this determination it is well to eliminate from the vulcanized rubber the different organic additions which it may contain and which may render the results faulty, by making preliminary extractions with acetone, chloroform and alcoholic-potash.

This process is not only suitable as an analytic method, but can be utilized industrially for the separation of unvulcanized caoutchouc present in waste rubber.

CHEMICAL PATENTS.

THE UNITED STATES.

COMPOSITION FOR SOLES.—Composition and soles of vulcanizable material consisting of a mixture of comminuted waste felt roofing saturated and treated with asphaltum and boiled linseed oil; reclaimed rubber, litharge, sulphur, and zinc oxide. (George R. Wyman and Andrew E. Currier, assignors to Charles S. Bird, all of Walpole, Massachusetts. United States patent No. 1,284,023.)

ARTIFICIAL RUBBER AND PROCESS OF MAKING.—A composition of matter for use in the manufacture of artificial rubber, including vulcanizable vegetable oils, resinous hydrocarbon bodies, camphor, powdered shale and sulphur. (Edwin R. Talley, Grinnell, Iowa. United States patent No. 1,285,463.)

RUBBER DERIVATIVES AND PROCESS.—A plastic oxidation product of rubber produced by treating a natural rubber with an oxidizing agent (ozone) in the presence of water and copper oleate. (Walter O. Snelling, Pittsburgh, Pennsylvania. United States Patent No. 1,288,723.)

SYNTHETIC RUBBER PROCESS.—A process of making a rubber-like substance by synthesis which comprises heating a mixture of pinene and an acid until the pinene is changed into limonene raising the temperature of the mixed vapors until the limonene is partly changed into a rubber-like substance, condensing the vapors, and removing the acid. (Louis Gottschalk, Metuchen, New Jersey; Esther J. Gottschalk, administratrix of said Louis Gottschalk, deceased. United States patent No. 1,289,444.)

MATERIAL COMPRISING METAL AND VULCANIZED RUBBER.—Rubber vulcanized by an agent containing oxygen and a metallic material attached thereto. (Albert A. Somerville, Flushing, New York, and Mahlon J. Rentschler, Willoughby, Ohio, assignors to Rubber Regenerating Company, Naugatuck, Connecticut. United States patent No. 1,289,566.)

PROCESS OF PREPARING TIRE-TREADS.—On a tire-tread a band of vegetable fiber is formed, impregnated with hot tar and rosin. After cooling, grit is applied to the prepared surface. (Delaska A. Kendall, San Diego, California. United States patent No. 1,290,576.)

THE DOMINION OF CANADA.

VULCANIZABLE COMPOSITION AND PRODUCT.—A vulcanized, composition rubber product comprising natural and reclaimed rubber, coumarone resin, sulphur, and extending materials. (Alfred Alonzo Wells, Montclair, N. J., U. S. A. Canadian patent No. 186,812.)

TREATMENT OF FABRIC.—The treatment of fabric by impregnation and the product of the process patented. The process:

consists of treating the fabric with an emulsified lubricant produced by a basic emulsifying agent adapted to produce a capillary impregnation of the fabric, evaporating the volatile carrying liquid and subsequently applying a vulcanizable compound. (The Canadian Consolidated Rubber Co., Limited, Montreal, Quebec, Canada, assignee of Erwin E. A. G. Meyer, Detroit, Michigan. Canadian patent No. 186,407.)

THE UNITED KINGDOM.

SUBSTITUTES FOR INDIA RUBBER.—Substitutes for india rubber are made by mixing together a fatty oil, sulphur or compound of sulphur, and stearine or other hard fat, with or without other ingredients, and then heating them. The following is one example of ingredients and proportions: linseed oil, 1 part; sulphur, 1 part; stearine, 1 part; oxide of iron, $\frac{1}{2}$ part. A small proportion of tar, or resin or other pitch-like substances may be added. Also, lime may be added. The material may be strengthened by adding sawdust, cellulose in the form of cotton, jute, and paper. The material forms a varnish with most of the well-known rubber solvents. (F. J. Bennett, Gordon Cross House, Dronfield, Derbyshire, and F. W. Mellowes, Corporation Works, Corporation street, Sheffield, England. British patent No. 119,878.)

LEATHER SUBSTITUTE.—Relates to rubber substitutes of the kind containing scrap and new rubber, scrap leather, and cotton or other vegetable fiber. It may include a coloring agent and slate or cement for increasing the weight. (J. L. Watkins, 1 Jeffrey's road, Clapham road, London. British patent No. 119,902.)

COLORS RUBBER.—A sheet of rubber or fabric is provided with pigment, as aluminum powder, in its outer layer only, the pigment being embedded by vulcanization so as to produce a smooth glossy surface. (W. J. Mellersh-Jackson, 28 Southampton Buildings, London, England. [India Rubber Co., 1790 Broadway, New York.] British patent No. 120,824.)

HALOGENATING RUBBER.—Alkyl, alkylene, alkenyl, and aryl halides, such as trichlorethylene and tetrachlorethane, are used as solvents in the making of halogenated india rubber, gutta percha or balata. (S. J. Peachey, 5 Yew Tree Road, Davenport, Stockport, England. British patent No. 121,091.)

AUSTRALIA.

TIRE SEALING COMPOSITION.—This is identical with U. S. patent No. 1,271,015 (The India Rubber World September 1, 1918, page 723.) (Puncture Cure, Limited, assignee of Ernest Campbell and T. F. Cushman, Calgary, Alberta, Canada. Australian patent No. 8,872.)

BOX-TOE STIFFENER.—A self-hardening compound consisting of asphaltum, paraffine wax, carnauba wax and gutta percha for use in molding under heat and pressure to form desired. (J. H. Ordway, Massachusetts, U. S. A. Australian patent No. 5,933.)

THE FRENCH REPUBLIC.

COLORS RUBBER.—Process of making colored rubber and products obtained by the aid of rubber. Same as British patent No. 102,824. (India Rubber Co., 1790 Broadway, New York City, U. S. A. French patent No. 488,372.)

ESTIMATION OF UNSAPONIFIABLE RESINS IN RUBBER.

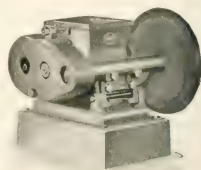
The following abstract from the "Journal of the Society of Chemical Industry," volume 37, 341A, outlines the method of P. Dekker on the estimation of the content of unsaponifiable resins in various kinds of rubber mixings:

When the mineral oil in a rubber mixing is estimated by the measurement of the unsaponifiable portion of the acetone extract which is soluble in petroleum ether, the accuracy of the result is affected by the fact that a part of the rubber resins resists saponification and is included with the mineral oil. The oxidation products of rubber are completely saponifiable, and the ordinary method of analysis includes them with the saponifiable resins.

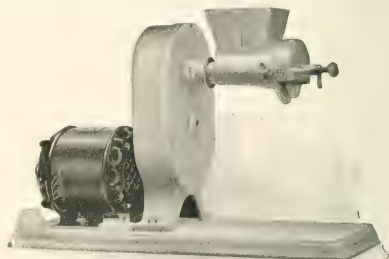
LABORATORY APPARATUS.

LABORATORY GRINDING AND KNEADING MACHINES.

THERE is daily occasion in the rubber laboratory, as in many others, for grinding and mixing machines in the preparation of samples where the ordinary roller mixer is not suitable. This requirement is met most effectively by the new series of grinding and kneading or mixing machines here illustrated. They are built in three laboratory sizes. Both grinder and mixer are electrically driven. The former has a very unique feature in its interchangeable grinding units. These units can be furnished for either wet or dry grinding and are easily joined with or separated from the power unit. This permits a number of these interchangeable grinding units to be kept on hand,



LABORATORY MIXER.



LABORATORY GRINDER.

each unit being used for a separate purpose. (Werner & Pfeleiderer Co., Inc., Saginaw, Michigan.)

ABBE REFRACTOMETER.

The Abbé refractometer is shown in the illustration as manufactured by Adam Hilger, Limited, 75a Camden Road, London, N. W. In addition to its well-known general use as a laboratory instrument for the identification of oils, resins, etc., the



ABBÉ REFRACTOMETER.

Abbé refractometer here referred to is coming into use for the control of solutions of rubber and the solvents used in their manufacture. These instruments are standardized and the parts are interchangeable, a matter of great convenience in repair replacement. It is suggested that this refractometer might form a valuable aid in dealing with such problems as the following:

Ascertaining degree of vulcanization of lightly cured goods.

The determining of resin in rubber.

The establishing of some relation between the quality of different rubbers, and such an easily measured physical property as the refractive index. (Eimer & Amend, 211 Third avenue, New York City.)

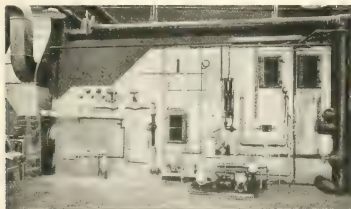
New Machines and Appliances.

"CONDITIONING"—A NEW RUBBER-DRYING SYSTEM.

SINCE rubber first became an article of industrial importance the drying of the crude, after washing and preparatory to compounding, has constituted a problem of great interest to rubber manufacturers everywhere.

The so-called "natural drying method," adopted at first because it seemed the most obvious expedient, consisted in hanging the washed sheets over horizontal racks and subjecting them to the chance effects of atmospheric conditions. This method required from two to five weeks, in some cases even longer, and though the quality of the rubber so dried was good, the impossibility of establishing a routine, and the amount of money rendered non-productive for long periods, led to the abandonment of this process, in favor of more advanced methods.

Recently there has been perfected a system which is called "conditioning" as distinguished from "drying," because the results obtained are due to the use of conditioned air, applied somewhat differently from the manner previously employed. In this system the sheets are placed on trays, racked in tiers on trucks, and the trucks placed within a dry-room constructed of dressed and matched lumber over a 2 by 4 framework. The



THE CARRIER DRYER.

dry-room is provided with conditioned air through a set of ejector nozzles in such manner that an absolutely positive and uniform circulation is maintained throughout every cubic foot of space enclosed by the kiln. Before the air is admitted through the nozzles it is conducted through a humidifier, wherein it is washed free of impurities (ammonia gas, if present) and automatically brought to an exact, predetermined degree of humidity. Leaving the humidifier, the air is drawn through a ventoy or steam-coil heater, brought to the required temperature, and admitted to the kiln through the ejector nozzles.

Not only is circulation within the kiln insured by means of the nozzles, but re-circulation is provided so that all of the air within the kiln is periodically removed and replaced with clean air. Constant humidity is thereby maintained, and maximum efficiency secured by automatically recirculating as much of the heated kiln air as possible. The system is entirely automatic in its operation, thus avoiding expense and obviating carelessness. (Carrier Engineering Corp., 39 Cortlandt street, New York City.)

FRENCH HORIZONTAL SPREADING MACHINE.

This type of spreader is commonly used in France, although the vertical machine is sometimes preferred for special work. While the horizontal type is built along the general lines of spreader construction, certain details, however, are different, and therefore of interest.

The rubber-covered feeding roller is 7 1/2 inches in diameter,

78.7 inches long, and is provided with an adjustable spreading knife and adjustable, compound guides. The cast-iron hot-plates are eight in number, each section measuring 78.7 inches



FRENCH SPREADER.

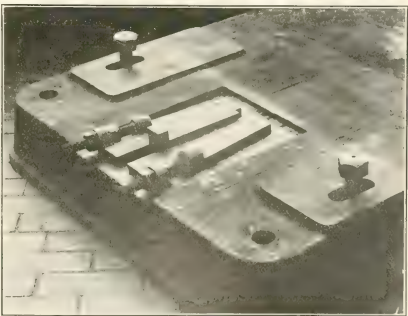
long by 19 11/16 inches wide and being provided with steam inlet and outlet connections.

The machine is belt-driven by a 3-step cone pulley and equipped with friction clutches, controlled by a bar extending over the front of the machine within reach of the operator, for starting and stopping the machine.

The rear fabric roller is driven from the front shaft by bevel gearing and a shaft connected by bevel gearing to the back roller and operated at the front by a hand-lever. The wind-up roller at the front is provided with a speed accelerator for rewinding the proofed fabric. (F. Soyer, 80-84 rue des Pyrénées, Paris, France.)

ADJUSTABLE ANCHORAGE FOR MOTORS.

In setting up electric motors of 50-horse-power and over, considerable skill is required to obtain perfect alinement, and for that purpose clearance is usually allowed in the bolt holes for final adjustment. With the adjustable anchorage device, this is not necessary, as the motors can be moved accurately in any direction in a horizontal plane. Installations, therefore, may be



ANCHORAGE FOR MOTORS.

made without close measurements, as the final alinement is easily accomplished by adjustable wedges.

Where very fine adjustments are required, as on magnetic clutches, it is important that no eccentric movement shall occur.

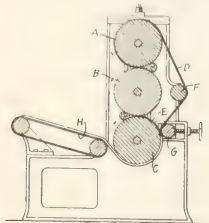
This often happens through wear of one or the other of the bearing boxes on either the motor or shaft, throwing them out of alignment, which in a short time destroys the journal boxes. It is then necessary to rebabbit the journal boxes and realine the motor. This expensive procedure can be obviated by the use of the adjustable anchorage.

In case the journal boxes wear unevenly the motor can be rotated and easily brought up into position again, whereas without the adjustable anchorage the grooves in the base of the motor must be planed out to allow this movement. (Adjustable Anchorage Co., 1502 Ford Building, Detroit, Michigan.)

MACHINERY PATENTS.

CALENDER FOR FORMING AND JOINING RUBBER SHEETS.

A PLURALITY of rubber sheets are calendered sufficiently thin to avoid blisters, and superposed by this machine, forming a multiple-sheet of desired thickness for making tire-building strips. In the operation, rubber stock is fed between rolls *A* and *B*, and also between *B* and *C*, forming banks shown in the illustration. As the rolls rotate in the direction indicated by the arrows, the rubber is formed into relatively thin sheets, *D* and *E*. The upper sheet *D* passes over idler roller *F* and under pressure roller *G*, where it is united with sheet *E* and then delivered from the machine by the conveyor *H*. A multiple sheet is thus



MULTIPLE-SHEET CALENDAR

formed that will be free from blisters and devoid of the usual imperfections encountered in calendering thick sheets. Three or more plies may be formed by providing rolls for each additional ply. (John Hanna, assignor to The Fisk Rubber Co., both of Chicopee Falls, Massachusetts. United States patent No. 1,289,744.)

OTHER MACHINERY PATENTS.

THE UNITED STATES.

- N**O. 1,287,071. Vulcanizing apparatus. W. C. Merrill, assignor by mesne assignments to The Merrill Process Co.—both of Boston, Mass.
- 1,287,253. Machine for kneading rubber, etc. S. C. Davidson, Belfast, Ireland.
- 1,287,256. Vulcanizing press. P. and B. De Mattia, Clifton, N. J.
- 1,288,181. Vulcanizing press. J. Pollak, Dorchester, Mass.
- 1,288,601. Apparatus for securing chain supports, frog, etc. J. Leckie, assignor to The First Leather Belt Co., both of New York, City. (Original application divided.)
- 1,288,641. Polishing machine. C. W. Mayer, Rochester, N. Y.
- 1,288,642. Vulcanizing machine. C. W. Mayer, Rochester, N. Y.
- 1,288,643. Stretching device for vulcanizing rolls. C. W. Mayer, Rochester, N. Y.
- 1,288,733. Tire-opening machine. W. C. Stevens, assignor to Firestone Tire & Rubber Co.—both of Akron, O.
- 1,288,746. Fabric-testing machine. S. P. Thacher, Weehawken, N. J., assignor to Revere Rubber Co., Providence, R. I.
- 1,288,862. Tire-building machine. G. F. Fisher, Roselle, N. J., assignor to Morgan & Wright, Detroit, Mich.
- 1,289,033. Rubber-working machine. W. P. Bradley, assignor to Revere Rubber Co.—both of Providence, R. I.
- 1,289,043. Apparatus and process for vulcanizing rubber goods. A. I. Comstock, assignor to American Rubber Co.—both of Boston, Mass.
- 1,289,233. Core-handling apparatus for tire-building machines. The C. Neal Smith & Co. Albany, Ind., assignors to Morgan & Wright—both of Detroit, Mich.
- 1,289,364. Device for manipulating rubber stock. H. C. Wagner, assignor to Woonsocket Rubber Co.—both of Woonsocket, R. I.
- 1,289,546. Tire mold. A. Hargrave, assignor to Firestone Tire & Rubber Co.—both of Akron, O.
- 1,289,768. Apparatus for manufacturing pneumatic tires. E. Hopkinson, New York City.

- 1,289,769. Mold for pneumatic tires. E. Hopkinson, New York City.
- 1,289,770. Mold for pneumatic tires. E. Hopkinson, New York City.
- 1,289,771. Vulcanizing apparatus for pneumatic tires. E. Hopkinson, New York City.
- 1,289,772. Apparatus for manufacturing pneumatic tires. E. Hopkinson, New York City.
- 1,289,773. Pneumatic-tire-building machine. E. Hopkinson, New York City.
- 1,289,749. Apparatus for manufacturing automobile tires. W. C. Stevens, Firestone Tire & Rubber Co.—both of Akron, O.
- 1,289,763. Mold for plastic materials. H. Weida, Highland Park, assignor to India Rubber Co., New Brunswick—both in N. J.
- 1,289,765. Rubber-working machine. G. W. Bulley, St. Joseph, Mo.
- 1,289,766. Apparatus for manufacturing rubber articles. J. R. Gammeter, assignor to the Rubber Tire Co., E. I. Goodrich Co., New York City.

THE UNITED KINGDOM.

- 120,332. Calendering machine. C. H. Crockwell and Sir J. Farmer & Sons, Widdowbury, Weymouth, Dorset, Dorset.
- 120,563. Machine for rolling tire cords. W. B. Harte, 144 East Market street, and E. A. Nall, 152 Grand avenue—both of Akron, O., U. S. A. (Not yet accepted.)
- Machine for rolling tire cords. W. B. Harte, 144 East Market street, and E. A. Nall, 152 Grand avenue—both of Akron, O., U. S. A. (Not yet accepted.)
- Machine for rolling tire cords. W. B. Harte, 144 East Market street, and E. A. Nall, 152 Grand avenue—both of Akron, O., U. S. A. (Not yet accepted.)
- Machine for rolling tire cords. W. B. Harte, 144 East Market street, and E. A. Nall, 152 Grand avenue—both of Akron, O., U. S. A. (Not yet accepted.)

THE DOMINION OF CANADA.

- Machine for rolling tire cords. W. B. Harte, 144 East Market street, and E. A. Nall, 152 Grand avenue—both of Akron, O., U. S. A. (Not yet accepted.)

PROCESS PATENTS.

THE UNITED STATES.

- N**O. 1,287,255. Process for rubberizing tires, ropes, etc., partially cutting same, twisting to increase size, and building into an article of manufacture and curing. R. B. Price, New York City, assignor to Rubber Regenerating Co., Naugatuck, Conn.
- 1,287,439. Manufacture of vulcanized rubber water-bags, etc. R. B. Price, New York City, assignor to Rubber Regenerating Co., Naugatuck, Conn.
- 1,288,253. Process of cementing together leather and rubber heel sections and attaching them to shoe soles, etc. J. F. Standish, Winthrop, Mass., assignor by mesne assignments to United Shoe Machinery Corp., Paterson, N. J.
- 1,289,232. Method of forming vulcanizable cores for tires. Thos. Mulgley, Sr. and B. Columbus, O.
- 1,289,767. Building pneumatic tire casings. E. Hopkinson, New York City.
- 1,289,772. Building pneumatic tire casings. E. Hopkinson, New York City.
- 1,289,776. Vulcanizing rubber articles. J. L. Mahoney, New Haven, assignor to The Goodyear's India Rubber Glove Manufacturing Co., Naugatuck—both in Conn.
- 1,289,777. Producing waterproof footwear. J. A. Ames, Nashville, Tenn.

THE FRENCH REPUBLIC.

- 1,289,000. Manufacture of artificial leather. J. Schmid.

AUTOMATIC LAMP-CORD REEL.

A very practical device and one that suggests a variety of uses in every rubber mill, is the automatic extension reel for electric lamps. Designed primarily for garages, this reel has been installed in factories, machine shops, warehouses, and storerooms with satisfactory results.

The reel is 9 inches in diameter by 2 inches wide and carries 25 feet of reinforced lamp cord. The head is provided with a swivel joint, so that the lamp may be carried in any direction from the reel, and an automatic lock checks the cord at any point. A slow, backward motion of the cord causes the lock to hold the cord and the release is effected by a slight pull, the cord being automatically rewound on the reel. (W. S. Broadhurst, 37-41 Cortlandt street, New York City.)



LAMP-CORD REEL

"RUBBER MACHINERY," BY HENRY C. PEARSON, IS FILLED WITH valuable information for rubber manufacturers. Price \$6.

The New York Automobile Show.

THE New York Automobile Show for 1919 was held under the auspices of the Automobile Dealers' Association, Inc., of New York, in Madison Square Garden and the 69th Regiment Armory, February 3-15.

The first week was devoted to the exhibition of passenger cars and the second to commercial vehicles, with accessories on exhibition in the gallery and a portion of the basement at the Garden, during both weeks. The attendance, interest, and sales at each section of the show were phenomenal.

THE PASSENGER CAR SECTION.

The outstanding feature of the passenger car exhibition was the fact that closed cars greatly predominated. This seems to be a very sensible development as the fixed top of the closed car body obviates delay and labor incident to erecting the removable top of the ordinary touring car, often necessary under trying circumstances.

By its permanent structure the closed body affords better protection against dust and weather conditions, without appreciably diminishing the advantages of light and air. This development in car bodies will be more appreciated by car users than by manufacturers of rubber and artificial leather automobile topping materials, as it promises to eliminate much of the former demand for such goods.

Another noticeable feature is the steady increase in appreciation of the cord tire, especially on the more expensive and heavier cars.

Certain of the accessories exhibits were of special rubber interest although there was a marked scarcity of new features in this department of the show.

RUBBER ACCESSORY EXHIBITORS.

THE BULL'S EYE RUBBER CO., Long Island City, New York. A self-curing patch for inner tubes.

A. SHRAEDER'S SON, INC., Brooklyn, New York. Maker of tire valves and tire-pressure gages, exhibited the well-known specialties of this company.

THE STORY RUBBER CORP., New York City. Bonner self-heating inner tubes, closing punctures by compression of the specially constructed tread.

DURAL RUBBER CORP., Flemington, New Jersey. Antimony-red hand-made inner tubes.

PARA-BELL RUBBER CO., Columbiana, Ohio. Tires and tubes.

EASTERN RUBBER CO., Philadelphia, Pennsylvania. Magic Mend for repairing inner tubes.

GEO. H. RIVES MANUFACTURING CO., INC., New York City. Auto pedal pads.

THE COFFIELD TIRE PROTECTOR CO., Dayton, Ohio. A thick tread protector of firm elastic rubber without fabric which functions by turning and clinching nails that may pierce the tread of the tire casing.

J. & D. TIRE CO., Charlotte, North Carolina. Pneumatic tires guaranteed for 5,000 miles.

GATES RUBBER CO., Denver, Colorado. Gates Half-Sole tires and Gates tested tubes.

THE NORWALK TIRE AND RUBBER CO., Norwalk, Connecticut. High-Pressure casings and tubes.

DUPLEX TIRE CO., INC., New York City. DuPlex Non-skid tires.

CARLISLE CORD TIRE CO., New York City. Carlisle cord tires, specially constructed with two plies of single unbroken strands of rugged, large-diameter cotton cord.

THE SHAW TIRE CO., Boston, Mass. A leak-proof molded endless inner tube secure against loss of air when punctured, by compression imparted to the entire tube by reason of the scientific principle involved in its formation and inflation.

RUBBER PRESERVING CO., Chicago, Illinois. A patented liquid preparation known as "Kept-rubber," for preserving rubber goods of all kinds. It overcomes the tendency of rubber goods to deteriorate by oxidation, thus maintaining elasticity, flexibility, resilience and usefulness indefinitely.

THE COMMERCIAL CAR SECTION.

FROM the point of view of rubber interest, the exhibits at the commercial car section of the show presented few novelties. For the tire manufacturer, however, there were certain exhibits which were notable because they signalize recognition of the factors of economy involved in adapting wheels and tires to conditions of roads, loads, and speeds. From this point of view, injury to the truck and mechanism depends on the selection of tires and how they function. In line with this purpose the increasing use of pneumatic tires, particularly the larger sizes of cord tires, was noticeable, some of these tires being 42 by 9 and 44 by 10 cords of Firestone and Goodyear make, fitted to steel wheels.

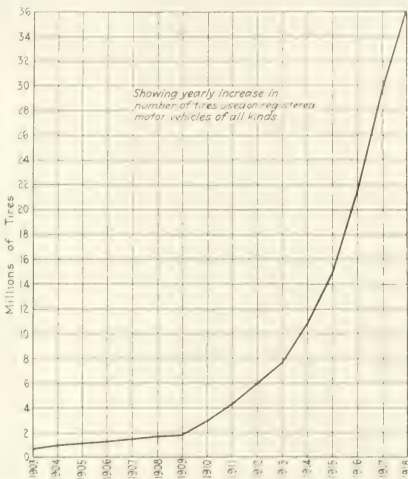
THE BRUNSWICK-BALKE-COLLENDER CO., Chicago, Illinois, made an interesting display of their line of solid tires, cord and fabric pneumatics, and inner tubes, all recent developments from the company's extensive model plant at Muskegon, Michigan.

Substitutes for air for filling tire casings, such as the preparation manufactured by the ESSENKAY PRODUCTS CO. and that by the STANDARD FILLER CO. were demonstrated very effectively.

An interesting tire was that exhibited by the EAGLE PUNCTURE PROOF TIRE AND WHEEL CO., of New York City, comprising two side pneumatic cylinders supporting a solid tire tread backed by a shock-absorbing device.

THE SEWELL CUSHION WHEEL CO., Detroit, Michigan, exhibited a wood wheel of composite structure, comprising a spoked center with a zig-zag molded soft-rubber cushion filling the annular space between two wood felloes, the outer one of which carries a standard solid tire.

Other lines of accessories shown were: rubber patches for inner tubes, by the Bull's Eye Rubber Co., Long Island City, New York; Magic Mend for inner tube puncture repairs, by the Eastern Rubber Co., Philadelphia, Pennsylvania.



New Goods and Specialties.

A SWIMMING WEB FOR THE HAND.

THE approach of spring and summer calls out novelties and specialties suitable for use during those seasons. Sports always come in for their share of attention, and now that the restrictions on the manufacture of rubber goods have been removed, no doubt the coming months will show many sports accessories of rubber and rubberized fabrics.

The swimming device shown here is of sheet rubber such as used for bathing caps, and has a flat web between each of the tubular finger casings, the open ends of which permit the fingertips to come through. The edges of the web form a reinforcing band between the finger casings. The web is said to aid materially in increasing a swimmer's power and speed, as well as in keeping him afloat. A patent has recently been granted to the inventor. (Justin A. Clarke, Vincennes, Indiana.)

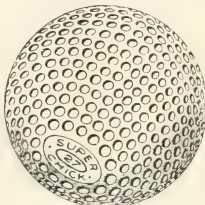


RUBBER SWIMMING WEB.

A NEW GOLF BALL.

Dealers in sporting goods will be glad to know about this new golf ball, called the "Super-Chick." It is made in two styles, floating and non-floating, in recess and mesh marking. A number stamped on the pole of the ball indicates which kind it is.

The particular features of this ball are its extraordinary powers of flight, its steadiness, and its reliability on the putting green. It is so constructed as to remain spherical and is painted with a special paint so applied that the ball will retain its whiteness, even after many rounds. (The North British Rubber Co., Limited, 43 Colborne street, Toronto, Ontario.)



"SUPER-CHICK" GOLF BALL.

TO FIT HIGH-HEELED FOOTWEAR.

The continued vogue of Louis Quinze heels of extreme type, 12/8 to 18/8 high, has increased the demand for rubbers to fit over such up-to-date footwear. The illustration shows the graceful lines of a rubber designed to fill this demand. It follows the shape of the leather shoe with the narrow recede toe, and is so constructed as to fit snugly the instep and the breast of the heel. The back of the quarter is so modeled as to cling tightly when properly fitted.



"BELL"-SHAPE RUBBER.

This rubber is made in black, seal-brown, and taupe colors, and the manufacturers report a large sale throughout the Dominion of Canada. (Columbus Rubber Co. of Montreal, Limited, Montreal, Quebec, Canada.)

A NUTLESS HOSE CLAMP.

While hose clamps look much alike, occasionally one is met with that has some distinguishing feature to recommend it by contrast with other similar devices.



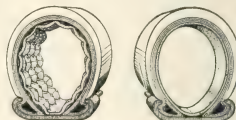
"LOCK-ROLL" CLAMP.

The one shown here, called the "Lock-Roll" hose clamp, eliminates the nut so generally used and depends on its special construction for efficiency. It is made of nickel-plated steel in stock sizes from $\frac{3}{8}$ -inch to $\frac{3}{4}$ -inch by $\frac{1}{8}$ -inch variations, and requires nothing but an ordinary screw-driver for its adjustment. It is guaranteed by its manufacturers to be non-stripping and vibration-proof, and adaptable in every case where it is absolutely necessary to have a tight connection. (Federal Tin Co., Charles and Barre streets, Baltimore, Maryland.)

A NOVEL INNER TUBE.

One of the novelties of the recent New York Automobile Show was an inner tube of the leak-proof variety, of which an illustration is given herewith.

The tube is molded seamless with thick walls, and presents a series of cup-like depressions in staggered arrangement over the entire surface. By this formation thirty per cent more material is contained



THE "AUTO-SEAL" INNER TUBE.

in the tube walls than would be the case were it molded perfectly circular in cross-section. Under inflation this excess material is effectively compressed by flattening outwardly the inwardly-curved depressions, thus supplying the anti-leak feature. (Shaw Tire Co., Inc., 2 Old South Bldg., Boston, Massachusetts.)

A NAIL-BRUSH WITH SUCTION CUPS.

The demand for a nail-brush that can be used with only one hand has produced the one shown in the accompanying illustration.

It is provided with two good-sized rubber suction cups attached to the back of the brush, by means of which it can be temporarily held in place on the top or side of a wash-basin or set-bowl.

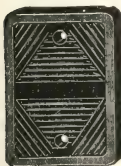
The problem of properly cleaning the nails and hand when only one hand can be used has to be experienced to be appreciated. There are many men to-day, as the result of the recent war, who are temporarily or permanently so handicapped. A brush of the kind shown here would be warmly welcomed by such individuals. (S. Maw, Son & Sons, Limited, 7 to 12 Aldersgate street, London, E. C., England.)



"LIMPET" ONE-HAND NAIL-BRUSH.

AN ADJUSTABLE PEDAL COVER.

A new rubber cover for automobile pedals is made in such a way that it is adjustable to all makes of square and oblong pedals and can be adjusted with the fingers. There are no holes to drill and no bolts to come loose. A lock spring and sliding clip are the means by which the cover is attached. It can also be fitted to concave and convex pedals by bending as required. (Rich Manufacturing Co., 1777 Broadway, New York City.)



Patent applied for
"Rico" Pedal Cover.

from the heel, and one containing an invisible rubber cushion and air space which create a pneumatic effect when the fiber plug presses against the rubber cushion. To the top surface of the heel is applied a special cement which softens in a lamp flame, permitting the ordinary shoemaker to apply the heel by

NEW TYPE OF RUBBER HEEL.

A rubber heel of new design is composed of two separate sections; one of rubber compound, containing a friction fiber plug, modeled and vulcanized separately



The Bull's Eye Two-Section Rubber Heel.

driving six nails. This method of construction makes it possible to use a better grade of rubber in the heel proper, increasing the wearing quality. (Bull's Eye Rubber Co., Long Island City, New York.)

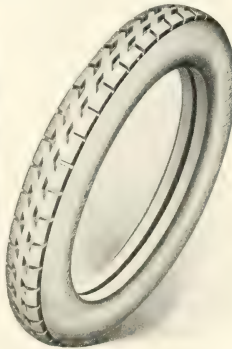
A GROUP OF INTERESTING NEW CORD TIRES.

Among the new cord tires that are coming into more general use every day, the one that combines with its cord construction the already well-known features of other kinds of tires made by the same manufacturer has a distinct advantage, especially from the standpoint of advertising.

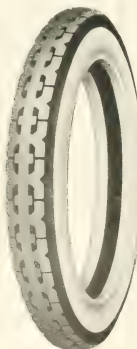
The first tire of the group shown here embodies the uniform mileage feature and the "geared-to-the-road" tread which its manufacturer patented for use in its pneumatic tires. The tread has caterpillar teeth, and there are vacuum cups in the running band, both of which combine to give this tire its positive traction, even on wet asphalt. (The Miller Rubber Co., Akron, Ohio.)



MILLER.



MICHELIN.



GENERAL.

The middle tire of the group on this page represents the latest product of its manufacturer. It is called the "Improved

Universal" cord tire, and is built by a special process by which each separate cord is impregnated with rubber and not merely coated. The finished tire is therefore more resilient and offers greater resistance to shock and to the action of moisture and air. This tire combines the effective non-skid tread and the broad flat traction surface which are features of the tires of this manufacturer. (Michelin Tire Co., Milltown, New Jersey.)

An 8-ply cord tire is third in this group, of 2-cure construction, expanded on a specially constructed air bag instead of the usual steel core. Each

SPECIALTIES IN RUBBER FOOTWEAR.

The prevalence of high heels of the Louis and Cuban types in women's leather footwear has raised some problems which rubber-shoe manufacturers have been forced to solve. That they have been successful in overcoming the difficulties of

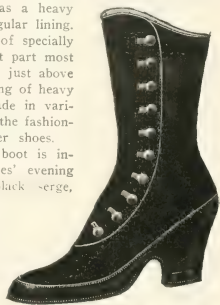
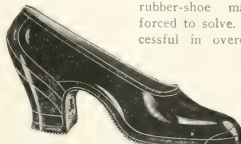
perfect fit, ease of putting on and off, and proper wear of heels equal to the soles, is acknowledged by retailers and wearers.

The "Hiheel" rubber shown here is intended to wear over ladies' evening slippers. It is of fine black -erge,

THE "TOP NOTCH HIHEEL" RUBBER.

to fit the present-day shoe styles. It is made in this "croquet" height and also in the "storm" style, higher in cut over the vamp. Its special advantage over other rubbers is the construction of the heel, which has a heavy duck interluff under the regular lining. The stock of the tread is of specially tough compound, while that part most likely to wrinkle and break just above the tread has an extra piping of heavy rubber. This rubber is made in various shapes to fit snugly all the fashionable lasts of ladies' leather shoes.

The "Top Notch" auto boot is intended to wear over ladies' evening slippers. It is of fine black -erge, rubber interlined, with warm, fleecy, wool fabric lining. It has ten buttons with reinforced button-holes, and durable sole and heel tread for walking when that is preferred. (Beacon Falls Rubber Shoe Co., Beacon Falls, Connecticut.)



"Top Notch" AUTO BOOT.

individual cord is expanded equally and the tire is cured while the cords are stretched to the degree that inflation on the wheel would have stretched them. The tire on the wheel afterward is therefore in the same condition when inflated as it was when cured. (The General Tire & Rubber Co., Akron, Ohio.)

JUDICIAL DECISIONS.

L. P. LARSON, JR., CO. VS. WM. WRIGLEY, JR., C. WM. WRIGLEY, JR., CO. VS. L. P. LARSON, JR., CO.—Circuit Court of Appeals, Seventh Circuit. July 30, 1918.

The Wrigley company appealed from a final dismissal of its bill against the Larson company in which it alleged unfair competition and the infringement of its trade name "Spearmint."

The Larson company had on the market a chewing gum called Peptomint. The Court decided that Spearmint, being a proper noun, was not susceptible of appropriation as a trademark and that even if it were, the Larson trade-mark was not an infringement.

The two brands are put on the market in bundles of 5 sticks each, done up in pink waxed paper bound together so that the ends stick out of a white outer wrapper printed in red and green. However, when the two are placed side by side they are strikingly different. Wrigley secured an injunction against this brand, pending decision by the court.

While under this injunction Larson put on the market his "Wintermint" brand and about seven months afterward Wrigley put his "Doublemint" on the market in a package similar to that used by Larson. After the Wrigley product appeared on the market the sales of "Wintermint" decreased.

The Court of Appeals dismissed the bill against Larson and reversed the dismissal of the counterclaim, ordering an injunction and an accounting. (Federal Reporter, Volume 253, page 914.)

WILLIAM WRIGLEY, JR., CO. VS. J. P. LARSON, JR., CO.—Supreme Court of the United States, November 23, 1918.

Petition for a writ of certiorari to the United States Circuit Court of Appeals for the Seventh Circuit denied. (Supreme Court Reporter, Volume 39, page 22.)

CUSTOMS APPRAISER'S DECISIONS.

GUTTA SIAK.—The appeal of Charles H. Demarest (New York) to have gutta siak, which had been classified at 15 per cent. ad valorem under paragraph 385 of the Tariff Act of 1913, admitted free of duty as gutta percha under paragraph 502, was upheld. (Treasury Decisions, Volume 36, No. 3, January 16, 1919.)

CHICLE.—Protests of Wm. Wrigley, Jr., Co., et al., Chicago and New York; of American Chicle Co., Cleveland, Ohio; of American Chicle Co., Detroit, Michigan. The question was whether certain chicle was refined, or advanced, or dutiable as crude under the provisions of paragraph 36 of the Tariff Act of 1913. It was held properly classified as refined, at 20 cents per pound under paragraph 36. (Treasury Decisions, Volume 36, No. 3, January 16, 1919.)

JELTONG—GUTTA SIAK.—Protests of William F. Mullen et al., and of The Rubber Association of America. Gutta siak and jeltong, which had been classified under paragraph 385 of the Tariff Act of 1913, were claimed to be entitled to free entry under paragraphs 502 and 513, respectively. The claims of the protestants were upheld. (Treasury Decisions, Volume 36, No. 4, January 23, 1919.)

RUBBER BROOCHES.—Protest was made by William H. Stiner & Son, New York City, against the classification as jewelry at 60 per cent ad valorem under paragraph 356, Tariff Act of 1913, of brooches of vulcanized or hard rubber in imitation of jet.

The merchandise was held dutiable as manufactures of rubber at 25 per cent under paragraph 369. (Treasury Decisions, Volume 36, No. 5, January 30, 1919.)

GUTTA SIAK—GUTTA PERCHA—CRUDE RUBBER.—Protest was made by George S. Bush & Co., Inc., et al., Seattle, Washington, against the invoicing as non-enumerated articles under paragraph 385, Tariff Act of 1913, of gutta mieauw, gutta habock, gutta hand kang, kampar gutta percha, and bankok gutta percha. The merchandise was held entitled to free entry under paragraphs 502 and 513. (Treasury Decisions, Volume 36, No. 5, January 30, 1919.)

ADJUDICATED PATENTS. THE UNITED KINGDOM.

IN THE MATTER OF A TRADE-MARK OF THE NEW ATLAS RUBBER CO., LIMITED.—In the High Court of Justice, Chancery Division, October 17-18, 1918.

The New Atlas Rubber Co., Limited, which had registered in Class 40 a trade-mark, No. 357,844, consisting of the word "Talisman," brought action for infringement of the mark against the Rubber Heel Manufacturing Co. The plaintiffs had sold to and the defendants had manufactured for the Maison Talbot, Milan, Italy, rubber heels bearing this trade-mark combined with the Italian firm's initials. The Maison Talbot owned this trade-mark in Italy and the applicants sought to obtain a monopoly in the United Kingdom of business with this foreign firm by registering its trade-mark in The United Kingdom as their own when they had acted only as agent for the owner. The testimony brought out that this effort was part of a systematic plan to "jump" customers' trade-marks and that the applicants had registered or attempted to register four other marks under similar circumstances.

Held, that the respondents (the applicants) had been merely the agents for the foreign firm to stamp goods being made for it with its trade-mark and initials; that there had been a limited use of the mark in The United Kingdom sufficient to disentitle the respondents to register it; that the intention of the respondents had been to prevent anyone else in The United Kingdom competing with them for business for the foreign firm; and that they were not entitled to do that. The trade-mark was ordered to be removed from the register.

PHILLIPS VS. HARBRO RUBBER CO.—In the High Court of Justice, Chancery Division, October 23-24, 1918.

Registration in Class 3 was obtained for a design of rubber pads or plates for heels of boots and shoes, consisting of a pad in the shape of a heel and having a plain central depression that might be filled in with leather or other material, and ornamented on the surrounding portion with cross lines. The proprietor brought an action for infringement. The defendants had sold rubber heels of the same form as the registered design, except that the ornamentation was different. It was proved, that, from a date prior to that of the registration, the defendants had sold two forms of rubber heels similar in form to the registered design, but having the surrounding portion plain, and, in the one case, a central depression that was plain, and, in the other case, a central portion with a pattern at a slightly lower level than that of the surrounding portion. The defendants contended that, if the parts of the designs were important elements of novelty, the defendants' rubber heels had not those details, and there was no infringement; or, if the parts were not important, the design differed so little from the prior forms of heels that it was not new or original.

Held, that the importance of the parts of a design is dependent on the character of the design; and that there was no substantial novelty or originality in the plaintiffs' combination of old parts. The action was dismissed with costs, and a certificate as to certain of the particulars of objections was given. (The Illustrated Official Journal Supplement, Volume XXV, No. 14.)

Interesting Letters from Our Readers.

HOW BIG IS THE RUBBER BUSINESS?

TO THE EDITOR OF THE INDIA RUBBER WORLD:

DEAR SIR—The present size of the American rubber trade comes up for discussion often and opinions seem to differ. One estimate in 1917 was \$900,000,000. About the same time Colonel Colt spoke of the gross business in the United States as being about \$800,000,000. Using crude rubber imports as a base and drawing on much manufacturing data, I get the following:

Automobile tires	.....	\$250,000,000
Automobile tubes	.....	70,000,000
Solid tires	.....	175,000,000
Boots and shoes	.....	100,000,000
Chairs, auto-topkins, and similar goods	.....	75,000,000
Hard rubber	.....	15,000,000
Rubber cement	.....	5,000,000
Mechanical goods	.....	300,000,000
Druggists' sundries	.....	50,000,000
Rubber insulated wire and insulation	.....	65,000,000
Motor cycles, bicycle tires, etc.	.....	10,000,000
Miscellaneous	.....	30,000,000
Total annual value	.....	\$1,455,000,000

Faithfully yours,

New York City.

N. W.

SPECIFIC GRAVITY TABLES.

TO THE EDITOR OF THE INDIA RUBBER WORLD:

DEAR SIR—Being in the employ of Messrs Lamprecht & Co. at Oerlikon near Zurich and having been brought up in the rubber trade, it is always with much pleasure that I read your paper, THE INDIA RUBBER WORLD, and follow any discussion about trade matters with much interest.

The tables on the basis of specific gravity 1.00 prompted me to write a few lines about my experience in this matter and the perfection which these tables can be brought up to by using volume prices on the said basis.

Perhaps you may find them also interesting to the readers of THE INDIA RUBBER WORLD.

Yours faithfully,

HERMAN GRIMELMANN.

Wallisellen, Switzerland.

The account of Mr. Grimmelmann's experience follows:

VOLUME PRICES AT SPECIFIC GRAVITY 1.00.

With reference to the specific gravity tables in the March and July issues of THE INDIA RUBBER WORLD I beg to say, that in my experience, both as cost clerk and salesman of an india rubber factory for mechanical goods, similar tables have been of the greatest use, both to the man in the office and to the traveler on the road, enabling them to quote the piece price of a certain article, of certain measurements, in a certain quality, at a few minutes' notice. While competing firms made their offers at so many francs per kilogram, the client mostly did not know the specific gravity of the quality offered him and was in consequence not properly fixed as to the cost of the article he had asked for and appreciated my offer when I quoted the price per piece or one hundred pieces. Though the specific gravity was stated, he had no time to reckon out the cost himself and would give the preference to the man who did it for him.

But also, from another point of view, such tables are of great value to the salesman, as he will get to know in this way the real value of his goods compared with other makes. Many times I quoted, for instance, the price for ordinary sheets and was told that a competitor offered at a much lower price and that an order could not be given. Of course no specific weight had been stated and even if it had been mentioned, it had not been taken into consideration by the client. After going fully into the matter and having taken the specific gravity into consideration, my quality was almost always preferred, in spite of its so-called "high" price.

In order to facilitate the use of such tables, they must be kept as plain as possible and the less operations you have to do to get at the result, the fewer mistakes will occur; also the handier the table is in size, the more it will be used.

In this respect the fixing of volume prices for the different qualities, also, on the basis of the specific gravity 1.00 will give much advantage to anyone using weight tables of specific gravity 1.00, as by this means the weight and the price basis are on the same foundation, the specific gravity 1.00, and one simple multiplication will bring you straight to the result.

For instance, instead of multiplying the weight given by the table for a certain dimension, by the specific gravity of the quality chosen, and multiplying the result again with the price of the said quality, I had fixed for each quality the volume price on the basis of the specific gravity 1.00 in my price-book and could therefore save one operation when quoting, for instance:

Quality Number.	Price Per Kilogram on Effective Weight.	Specific Gravity.	Volume Price on the Basis of Specific Gravity 1.00.
1	francs 16.00	1.20	francs 24.00
2	francs 16.00	1.50	francs 34.00
3	francs 16.00	1.25	francs 20.00
4	francs 12.00	1.62	francs 20.00
5	francs 10.00	1.30	francs 10.24
6	francs 8.00	1.00	francs 10.24

To get the most out of your tables, the prices of the different qualities should be fixed in the salesman's price-book on the basis of the one-ounce volume price, as the tables read in ounces. These one-ounce-volume prices would avoid the trouble of a third operation: viz., converting the ounces into pounds for which the prices are commonly fixed.

To give you an example: let us presume the price of quality X with specific gravity 1.50 is 1.60 per pound, effective weight, which is equal to 0.10 per ounce effective weight. The volume price of quality X on the basis of specific gravity 1.00 will then be 2.40 per pound. The one-ounce-volume price will be 0.15 per ounce.

If you wish to know the price of one square yard of sheets $\frac{1}{8}$ -inch in thickness, in the above stated quality X of specific gravity 1.50 the following operation will be necessary:

Your table shows: $\frac{1}{8}$ -inch thickness=93.60 ounces per square yard. Volume price for quality X is fixed at 0.15 the ounce. Result, 93.60 by 0.15=14.04 per square yard. While in the ordinary way three operations could not have been avoided, the fixed-volume price reduces same to one single operation and thus saves much time, besides helping to prevent errors.

I had different weight tables at hand, using them daily while quoting to the clients. For instance: Table No. 1, showing the weight at gravity 1.00 of cords, cylinders, etc.; Table No. 2, for tubes; Table No. 3, for balls; Table No. 4, for rings of round profiles; Table No. 5, for round joints of square profiles in all sizes which could possibly occur in the trade.

Tables for square sheets and square strips I had not in use, the reason why I did not miss them lying in the fact that such tables would not have given any advantage at all, the decimal system of weights and measurements enabling a quick result in a simple manner, giving the result not by one foot or one yard, but straight for the length desired.

I must confess that comparing your table with those I had in use, the balance lies much in favor of the latter, the superiority being caused by the great practical use of the French decimal system of weights and measurements, a fact for which, of course, you cannot be held responsible.

For instance the one-ounce volume price would be unnecessary and the one-pound volume price sufficient, if you could fix the

specific gravity tables 1.00 very exactly in pounds instead of ounces, as we can do, for example, with the decimal system of grams and kilograms. For the long and diametrical measurements we have also the advantage in fixing easily if necessary 1-tenth of a millimeter or one-250th part of an inch. Also in writing, how much shorter it is to write 70 mm. than $2\frac{15}{32}$ inches.

I feel sure, that anyone having used the two systems of weights and measurements, will ask himself, how it is possible that this French decimal system of weights and measurements has not yet been accepted universally as standard weights and measurements.

Why can chemists of the whole world have the same formulas for definite quantities, volumes, compositions, while engineers and business men worry themselves with inches, feet, yards and ounces, pounds, quarters and hundredweights instead of adopting the decimal system, based, as its name implies, on the figure 10.

There are, I am sure, many who must feel the same and I quite understand "Effero," author of a series of articles on molds for hard-rubber insulators in the "India Rubber Journal," who simply states: "All dimensions are in millimeters." Is there no remedy possible in the near future?

A QUESTION CONCERNING WASH SALES.

TO THE EDITOR OF THE INDIA RUBBER WORLD:

DEAR SIR—May we ask you as a special favor for information as to a custom in the crude rubber business.

We purchased from an importer ten tons of rubber, to be shipped five tons in January and five tons in March, 1919. We later decided to sell this quantity and resold it to the same importer at a profit, and they sent us what you call a "wash sale."

It was our impression that without exception the custom of the trade on a "wash sale" is that at the date of the wash sale an invoice is rendered for the difference, and this difference is payable net 10 days from date of invoice, as specified in the wash sale. This rubber was an originally contracted shipment from the Far East, five tons each January and March.

The importer now takes the position that he will make his first wash sale or pay us the difference in about two months from January, 1919, contending it will take approximately that time for rubber to come from the Far East and he will make another "wash sale" two months from March.

We will very much appreciate any information you will let us have as to the custom of the trade in such matters.

Yours very truly, EASTERN MANUFACTURER.

AN IMPORTER'S OPINION.

The importer is quite within his rights. The sale was made for January shipment and March shipment. It requires at the least three months to receive the rubber via the coast, and it often takes much longer. It requires at least 60 days to get the rubber from the Far East via the canal. The importer has evidently given the manufacturer the benefit of the quicker trip, when he could easily have claimed that it would come via the Pacific, and which in all probability will.

A resale is the same as making a sale; therefore the time when the rubber would be billed would be the starting point when the account would begin to run for the ten days term of credit. If the rubber was shipped on January 31 it could not be ready for delivery (taking 60 days as a basis) until early April, and the same time would be true of the March shipment. Thus you will see that the importer is treating his friend very fairly.

A "wash" sale is the same, to all intent and purpose, as a regular sale, and the terms would be the same. The importer has got to make an actual delivery to someone, and what he will do is to make a delivery to another buyer and settle with your correspondent as if he had made the sale for the account of the manufacturer.

By figuring this "wash" on the basis of two months the importer is going to lose interest, and his loss of interest will be 30 to 60 days' interest, which in all fairness he could save by not paying the manufacturer until he had waited 10 days from date of the actual delivery.

IMPORTER.

REPLETE WITH INFORMATION FOR RUBBER MANUFACTURERS—Mr. Pearson's "Crude Rubber and Compounding Ingredients."

NEW TRADE PUBLICATIONS.

MECHANICAL SUPERINTENDENTS WILL APPRECIATE THE SELECTOR meter, a handy device, in the form of a circular slide-rule for determining the correct size of Francke flexible couplings for any given drive. It is supplied on request to the trade by Smith-Serrall Co., Inc., 90 West street, New York City.

THE FIRESTONE TIRE & RUBBER CO., AKRON, OHIO, HAS SENT out a handsome catalog of its rubber footwear, which is unique in its illustrations. In addition to showing the various models in the usual half-tone style, many of these models have combined with them a phantom background of some process used in the manufacture, these being grayed, or subdued, so as to embellish, rather than detract from the excellent cuts showing the footwear samples. The book is pocket size, long and narrow, and shows a large variety of goods made by the latest, newest concern to engage in the manufacture of rubber footwear. A fine portrait of President Firestone and a graphic view of the big Akron plant are also included among the illustrations.

THE CUTLER-HAMMER MANUFACTURING CO., MILWAUKEE, Wisconsin, is distributing a handsome Spanish edition of its 1919 catalog of C-H wiring devices for the Central and South American trade. It illustrates and describes most of the devices shown in the 1919 English catalog, notably feed-through, pendant, and surface snap switches. The Spanish catalog comprises 24 pages, 8 by 10½ inches, and is bound in a striking orange-buff cover. It is uniform in style and arrangement with the 64-page English edition.

"VOCATIONAL EDUCATION FOR FOREIGN TRADE AND SHIPPING," Bulletin No. 24, issued by the Federal Board for Vocational Education, Washington, D. C., suggests courses of study on the practical aspects of the fundamentals of overseas commerce to be completed within a comparatively short time. It was written by Dr. R. S. MacElwee, Federal agent for commercial education on the above-named board, and a member of the faculty of Columbia University, New York City. This bulletin appeals particularly to business people employed during the day high-school seniors to be trained for junior clerks in the export business, engineers whose technical training must be supplemented by training in the essentials of the routine of foreign commerce, and colleges on a part-time or regular schedule. Business men are especially urged to investigate the courses for the benefit of their employees.

CALENDARS AND SOUVENIRS.

Tyson Bros., Woodbridge, New Jersey, manufacturers of chemicals, rubber substitutes, etc., are sending to the trade an art calendar reproducing C. D. Williams' painting, "The Angel of the Battlefields." The central figure is of a woman in white, representing the composite of women in all walks of life who have helped in winning the war. Around are grouped soldiers of each of the Allied countries, with a United States soldier and sailor, all paying her tribute. The color scheme is blue and white.

E. I. duPont de Nemours & Co., Wilmington, Delaware, have issued a large panel calendar advertising their different products, including chemicals. The calendar itself is printed in clear dark-blue figures of good size on white paper.

The Somerset Rubber Reclaiming Co., New Brunswick, New Jersey, is sending the trade an attractive brass desk combination including in one piece compartments for pins, stamps, etc., with a hinged cover on the outside of which the company's name is embossed, while inside is a 1919 calendar. Part of the base is a pen-tray, and the whole makes a happy combination and useful souvenir.

News of the American Rubber Industry.

ANNUAL REPORT OF THE B. F. GOODRICH CO.

THE B. F. GOODRICH Co., New York City, has recently issued its annual report for the year ended December 31, 1918, which shows the following figures:

PROFIT AND LOSS ACCOUNT.	
Net sales	\$123,470,187.67
Manufacturing, selling, and general administration expenses	102,136,830.39
Miscellaneous income	\$21,610,322.71
	296,465.43
	\$21,610,322.71
Provision for depreciation	\$2,428,225.61
Interest on bills payable, etc.	1,993,031.54
Reserve to reduce plant additions during war to pre-war values	1,447,540.22
Reduction of United States Liberty Bonds from cost to market value	104,410.72
	\$973,208.09
Net profit before providing for final income and war excess profits taxes, carried to surplus account	\$15,637,114.62
SURPLUS ACCOUNT.	
Balance, January 1, 1918	\$20,177,379.01
Net profit for year ended December 1, 1918	15,637,114.62
	\$35,814,493.63

10,000 shares 7 percent cumulative preferred stock at par, redeemed and cancelled during year		\$900,000.00
Additional appropriation for preferential dividend	100,000.00	
Reduction of treasury stock purchased, cost to par		9,506.25
7 per cent dividend on preferred stock for year	1,785,000.00	
4 per cent dividend on common stock, paid during 1918	(361,000.00)	
		\$ 194,506.25

DIVIDENDS

Ajax Rubber Co., Inc., New York City, has declared its quarterly dividend of \$1.50 per share, payable March 15 on stock of record February 28, 1919.

The Amazon Rubber Co., Akron, Ohio, at its annual meeting, declared an extra dividend of twelve and one-half per cent, payable in common stock.

The Brunswick-Balke-Collender Co., Chicago, Illinois, declared a quarterly dividend of one and three-quarters per cent

on its common stock, payable February 15 to stock of record February 4, 1919. The last previous dividend was paid on May 15, 1918, at the rate of one and one-half per cent, none having been paid since until the present one because of war conditions.

The B. F. Goodrich Co., Akron, Ohio, has declared quarterly dividends of one per cent on its common stock, payable May 15 on stock of record May 5, and of one and three-quarters per cent on its preferred stock, payable April and July 1 to stock of record March 21 and June 20, 1919, respectively.

The Pennsylvania Rubber Co., Jeannette, Pennsylvania, at its recent annual meeting declared a quarterly dividend of one and three-quarters and one and one-half per cent, respectively, on its preferred and common stock.

The Plymouth Rubber Co., Canton, Massachusetts, has declared its regular quarterly dividend of one and three-quarters per cent on its preferred stock, payable March 1 to stock of record February 21, 1919.

The Swinehart Tire & Rubber Co., Akron, Ohio, has declared a dividend of two per cent in cash, payable April 15 to common stock of record March 31, and an extra dividend of ten per cent in preferred stock, payable March 5 to stock of record February 20, the latter dividend being in lieu of those not paid between October 1, 1917, and December 31, 1918.

NATIONAL ASSOCIATION OF WASTE MATERIAL DEALERS.

David Feinburg, Lionel D. Waixel and George B. Smitheman, the Nominating Committee of the National Association of Waste Material Dealers, have made the following nominations, to be acted on at the annual meeting March 19:

Officers: F. W. Reidenbach, president; James Rosenberg, first vice-president; Edward A. Stone, second vice-president; Henry Lissberger, third vice-president; Ivan Reitler, fourth vice-president; Paul H. Loewenthal, fifth vice-president; M. B. Speer, sixth vice-president; David Feinburg, treasurer.

Directors for two years: George B. Smitheman, Julius Rosenberg, Herman Muehlstein and Herman Goldstein.

Independent nominations can be made on petition of 25 members, such petitions to be filed with the secretary not later than 20 days preceding the annual meeting.

RUBBER COMPANY SHARE QUOTATIONS.

QUOTATIONS BEFORE AND DURING THE WAR. PRICE AND YIELD AS OF DEC. 31, 1918

												1918.		
Corporation.	Security.	1913.		1914.		1915.		1916.		1917.		Last Sale	Dividend, Per Cent	Yield, Per Cent
		Par Value.	High. Low.	High. Low.	High. Low.	High. Low.	High. Low.	High. Low.						
Axax Rubber Co., Inc.	Common	\$50				71 1/2	67	89 1/2	63	80	45	4	67	9 1/2
The Fisk Rubber Co.	Common	100				126	60	170	67	75 1/2	40	75	49	None
The Fisk Rubber Co.	1st preferred	100				126	60	170	67	112 1/2	90	103	97	7 1/2
The Fisk Rubber Co.	2nd preferred	100						95	65	90	60	90	77 1/2	7 1/2
The Fisk Rubber Co.	1st convertible preferred	100												
Firestone Tire & Rubber Co.	Common	100	360	222 1/2	305 1/2	247	80 1/2	365	1700	230	150 1/2	97	100	7 3/4
Firestone Tire & Rubber Co.	Preferred	100								112	10	101	10 1/2	50 1/2
The B. F. Goodrich Co.	Common	100	68	31	28 1/2	19 1/2	24 1/2	88	11 1/2	112	9	101	7 1/2	7 1/2
The B. F. Goodrich Co.	Preferred	100	160	113 1/2	80	111 1/2	78	111 1/2	68	64 1/2	72	43	60 1/2	6 3/4
Kelly-Springfield Tire Co.	Common	100	4	30	20	60	75	78	60	64 1/2	72	43	60 1/2	6 3/4
Kelly-Springfield Tire Co.	Preferred	100				145 1/2	72	101	95	92	75	90	120	16 1/2
Goodyear Tire & Rubber Co.	Common	100	None			100	80	100	80	112	100	112	100	None
The Miller Rubber Co.	Common	100	20	135	165	115	170	157	80	91 1/2	60	112	100	10 1/2
The Miller Rubber Co.	Preferred	100				160	100	111	104 1/2	111	90	100	100	10
Portage Rubber Co.	Common	100						111	104 1/2	111	90	100	100	10
Portage Rubber Co.	Preferred	100						185	120	100	97	100 1/2	100 1/2	7 3/4
Swinghart Tire & Rubber Co.	Common	100				85	60							None
United States Rubber Co.	Common	100	65 1/2			44 1/2	7 1/2	11 1/2	7 1/2	85	66	84	100	None
United States Rubber Co.	Preferred	100	55 1/2	95	104 1/2	111	1 1/2	1 1/2	1 1/2	91	110	95	100	7 1/2

*Par value \$100 prior to 1917. **Par value \$100 prior to 1915. †Including 78% per cent and 28% per cent, respectively. ‡Among the minor rubber companies the high and low prices for 1918 were as follows: Empire Rubber & Tire Co., common stock, par \$10, high 33¢, low 23¢; preferred, \$100 par, high 70, low 40. International Rubber Co., high 15%, low 8. Keystone Tire & Rubber Co., common stock, par \$10, high 46%, low 11%.

(Continued on THE LATE RUBBER WORKS list by Borden & Co., 115 Broadway, New York City, and 31 South La Salle, street, Chicago.)

ONE OF THE REVERE PIONEERS.

A STEADY and unbroken service of nearly half a century with one concern is something of which one may well be proud. Such is the record of William H. Gleason, whose resignation from the offices of secretary and treasurer of the Revere Rubber Co., Chelsea, Massachusetts, was recently announced, after a continuous service of over 45 years.

William Henry Gleason was born and educated in Boston, and at the age of 15 entered a law office in that city. Later he was employed successively in the dry goods and the woolen goods businesses. On December 1, 1873, he entered the employ of the Boston Elastic Fabric Co., Chelsea, Massachusetts.

The company added mechanical rubber goods to its output, and the veteran Charles McBurney became president. In 1883 the company was reorganized and Henry C. Morse

was elected treasurer and general manager and the name of the company was changed to Revere Rubber Co.

Beginning as bookkeeper Mr. Gleason soon became assistant treasurer, then treasurer, and later both secretary and treasurer of the company. Connected with the company were E. S. Converse, Franklin L. Pitcher, George H. Hood, and George A. Alden, all pioneers in the New England rubber business.

Thus it happened that Mr. Gleason, intimately associated with the then leaders of the trade, was a factor in the history making of that period. He was also one of the founders of the New England Rubber Club, now The Rubber Association of America, held various offices and did much to make the club a success. Mr. Gleason has two characteristics that were of extreme value in the positions that he held, unusual financial ability and a faculty for turning off work that is phenomenal. He is never behind, in fact it is said of him that he usually does things "the day before."

Mr. Gleason remains as treasurer of the Associated Industries of Massachusetts, an organization of business men having 1,100 members, in which he has long been active. An alert, shrewd, capable Yankee, his many friends wish for him a long, happy continuation of his very useful career.

H. W. JOHNS-MANVILLE CO. TO BUILD IN ILLINOIS.

The H. W. Johns-Manville Co., Madison avenue and 41st street, New York City, manufacturer of asbestos goods and machinery packing, has purchased from several different owners a tract of land containing approximately 225 acres north of and adjoining Waukegan, Illinois, between the Chicago and Northwestern railroad tracks and Lake Michigan. As soon as conditions allow, a \$3,000,000 plant to duplicate the one already located at Manville, New Jersey, will be built. It will cover 1,250,000 square feet of floor space and employ between 2,500 and 3,000 persons. Eight parcels of land were included.

BOSTON BANK TO ESTABLISH FAR EASTERN CONNECTIONS.

C. F. Weed, vice-president of The First National Bank, and D. A. de Menocal, vice-president of The First National Corp., Boston, Massachusetts, have been sent by the bank to establish further foreign banking connections in Australia, China and Japan. They expect to be away about four months. Boston merchants have shown keen interest in the trip and have submitted numerous matters for inquiry.



WILLIAM H. GLEASON.

TRADE NOTES.

The Pennsylvania Rubber Co., Jeannette, Pennsylvania, at its annual meeting elected the following directors and officers: directors—H. Wilfred DuPuy, president-treasurer; Charles M. DuPuy, vice-president; George W. Shiveley, secretary; Herbert DuPuy, chairman; Seneca G. Lewis, vice-president-general manager; other officers—George W. Daum, second vice-president in charge of production; A. H. Price, second vice-president in charge of sales development; C. G. Morrill, assistant treasurer; H. H. Salmon, purchasing agent; James Q. Goudie, general sales director; executive committee—Messrs. H. Wilfred and Charles M. DuPuy, Lewis Shiveley, Morrill, Salmon, and Price.

The Kelly-Springfield Tire Co., New York City, has announced the following elections and appointments: vice-presidents—F. A. Seaman, secretary; C. A. Brown; Otis R. Cook, formerly general sales manager, and a director; Maurice Switzer, advertising manager; other appointments—W. H. Bell, former Chicago district manager, appointed manager of motor truck tire division of general sales department, succeeded by H. H. Grobe, former manager of Baltimore branch; Capt. S. P. Landers, recently discharged from service, manager of branch, Baltimore, Maryland; Capt. John Baldwin, former Washington representative, now with motor tire division of general sales office; H. B. Joseph, former assistant advertising manager, now manager of outdoor display.

The Globe Tire Manufacturing Co., New York City, held its annual stockholders' meeting at the office of the company, 1851 Broadway, on February 4, 1919.

The Traveler Tire and Rubber Co., 819 North Broad street, Philadelphia, Pennsylvania, has purchased a factory site at Bethlehem, in that state, where it expects to begin building early in the summer. Specifications for the building are now being prepared. The company has an authorized capital of \$1,000,000 common stock and \$350,000 preferred stock. The officers are as follows: Guy de la Rigauderie, president; Victor Durand, Jr., first vice-president; G. J. P. Raub, second vice-president; and E. E. Pollard, secretary and treasurer. The company will manufacture Traveler tires.

The United States Rubber Co., New York City, will exhibit at the Lyons fair to be held in Lyons, France, March 1-15, its full line of rubber tires, rubber and canvas footwear, belting, hose, insulated wire, gloves, sporting goods, druggists' sundries, and other rubber goods.

The Thermoid Rubber Co., New York City, at a meeting of its salesmen from the Boston, Philadelphia, and New York offices on January 29, discussed general trade conditions. The meeting was followed by a dinner at the New York Athletic Club, at which the bill of fare was printed on a salesman's expense report blank. The menu included "6,000-mile chicken," "Thermoid-Hardy peas," "Outlet ice cream," etc., to say nothing about "New York Branch cocktail" and "Boston Branch oysters." The company money on hand was "plenty" and directions regarding expense check read: "Hold! Do not need it."

The American Tire Filler Industry, Inc., was recently organized in the West, with offices at 220 West Superior street, Chicago, Illinois, and the following officers who are also directors: president, Franc D. Mayer, The Essenkay Products Co., Chicago, Illinois; first vice-president, Frank A. Hager, Universal Tire Filler Co., Portland, Oregon; second vice-president, Lee W. Lockwood, Dahl Punctureless Filler & Rim Co., Minneapolis, Minnesota; third vice-president, W. W. Major, National Rubber Filler Co., Midlothian, Texas; secretary, C. P. Umstot, Peerless Tire Filler Co., Chicago, Illinois; treasurer, L. G. Harris, Wolverine Tire Cushion & Accessory Co., Detroit, Michigan; J. Wolf, National Synthetic Tire & Rubber Co., New York City; and C. G. Schwarz, Panama Rubber & Equip-

ment Co., St. Louis, Missouri. The object of the organization is to standardize and perfect tire fillers, and it is incorporated without capital and not for profit.

E. I. du Pont de Nemours & Co., Inc., Wilmington, Delaware, will hold the annual meeting of its stockholders at the office of the company, 1007 Market street, on March 10, at noon, for the purpose of electing directors, receiving and acting on reports, etc.

Cameron Machine Co., 57 Poplar street, Brooklyn, New York, has increased its capital from 500 shares common and 150 preferred to 3,000 of each, making a total capitalization of \$600,000. Both classes of stock have been exchanged, share for share, for the new issue, of which 2,500 common and 850 preferred remain in the treasury and 2,000 of the new preferred are offered for sale.

The business conducted by William H. Stiles, crude rubber importer, at 79-85 Wall street, New York City, will hereafter be known as William H. Stiles & Co., Messrs. Lynn D. Stiles and Gordon Milne having been admitted to partnership.

H. Muehlstein & Co., dealers in scrap rubber, are now located at 147 East 125th street, New York City, their offices and one of five warehouse buildings having been destroyed by fire early in February. The new premises were formerly occupied by the Chatham & Phenix National Bank and provide facilities for the present lessee.

The Cotton Duck Association held its annual meeting at the Hotel Astor, New York City, early in February, and elected the following officers: William H. Wellington, president; Spencer Turner, vice-president; Summerfield Baldwin, Jr., treasurer; and C. S. Green, secretary. The executive committee includes the above officers and in addition S. Parker Bremer, F. Coit Johnson, William L. Barrell, and Robert P. Hooper.

Innis & Co., importers of crude rubber, etc., announce the removal of their general offices from 10 Herbert street to 132-4 Front street, New York City.

W. E. Byles, crude rubber and eastern produce broker, has moved to 140-142 Pearl street, New York City.

SCHAEFFER & BUDENBERG SALES AGENCIES.

The steady growth of the sales organization of Schaeffer & Budenberg, Brooklyn, New York, is indicated by the addition of Tulsa, Oklahoma, to their list of selling offices. This branch will carry a full stock of the firm's well known instruments, particularly those widely used in the refining industry. T. C. Eales has been appointed local manager.

Schaeffer & Budenberg now have direct branches in Chicago, Pittsburgh, Detroit, Philadelphia and San Francisco, and the following sales agencies: Toronto, Ontario, Milton & Prentiss; Greenville, South Carolina, L. W. Cuddy; Salt Lake City, Utah, F. C. Richmond Machinery Co.; Los Angeles, California, Adolf Frese Optical Co.; Seattle, Washington, Steam Supply & Rubber Co.

RUBBER SECTION OF THE AMERICAN CHEMICAL SOCIETY.

The plan to make the Rubber Section of the American Chemical Society a division of that society is beginning to take shape. By-laws similar to those of the other divisions have been drawn up for consideration by the executive committee, and the whole matter will be presented to the council of the American Chemical Society at the meeting in Buffalo in April.

It seems inadvisable to hold a meeting of the Rubber Section at that time, but preparations for the annual fall meeting are already in the making. The executive committee realizes fully that the success of this and every meeting depends upon the work of the rubber chemists of the country; that it is conditional upon their opportunities for original work in their special lines; and that it is sustained by the freedom with which the various problems confronting all are discussed. Secretary

Arnold H. Smith is therefore getting in touch with the rubber chemists of the country in an effort to have every laboratory head at the next meeting, which it is desired to make an especially active and interesting one.

The members of the executive committee are: John B. Tuttle, chairman; Dr. David Spence, George Oenslager, L. E. Weber, H. E. Simmons, L. H. Plumb and A. H. Smith, secretary, Bureau of Standards, Washington, D. C.

The jar-ring committee of the Rubber Section is working in active cooperation with the Department of Agriculture and it is expected that some announcement concerning its activities will be made in the near future.

NEW HOME OF AJAX RUBBER CO., INC.

For some months the building at 218-222 West 57th street, New York City, has been undergoing remodeling to adapt it for the use of its new tenant, Ajax Rubber Co., Inc. The build-



AJAX RUBBER CO.'S NEW QUARTERS.

ing is four stories high and offers approximately twice the area the company had in its former quarters.

The first floor of the new premises is devoted to the New York selling branch, while on the eastern and western ends, respectively, are a vestibuled entrance to the executive offices and a wide driveway. The offices of H. L. McLaren, president, Horace De Lisser, chairman of the board of directors, and of Stuart Webster, treasurer, are on the second floor, as well as the meeting-room of the board of directors and the credit, collection, and accounting departments. The third floor is occupied by the advertising department and the officers of the export, sundries, and traffic departments, branch house managers and sales correspondents. The sales conference room is also on this floor and the office of Fred E. Dayton, secretary and general sales manager of the company.

The exterior of the building has been refaced and the interior remodeled to meet the requirements of the company.

ALLEN MACHINE CO. OCCUPIES NEW PLANT.

The Allen Machine Co., Erie, Pennsylvania, is now installed in its recently acquired plant, which is one of the most modern in the country. Its facilities include a foundry, with two cupolas, machine tools for handling work up to 16 feet in diameter, 30-ton traveling cranes and motor-driven roll-lathes, and grinder.

NEW INCORPORATIONS.

Associate Controls Corp., January 27, 1919 (Delaware), \$2,500,000. M. L. Horthy, M. C. Kelly, S. L. Mackey—all of Wilmington, Delaware. Principal office with headquarters, Charter Guarantee & Trust Co. Du Pont Building, Wilmington, Delaware. To deal in, produce and manufacture goods, merchandise, and clothing, of which rubber is a component part.

Acoustic Tire & Rubber Co., January 9, 1919 (New Jersey), \$125,000. J. E. Adams, E. F. Egan, E. J. Hirsch—all of Newark, New Jersey. Principal office, 115 South Warren street, Trenton, New Jersey. Agent in charge, J. M. Weaver. To manufacture, purchase, sell, import, export and distribute automobile tires, etc.

Arentox Co., October 8, 1918 (Delaware), authorized capital, 1,000 shares of stock without nominal or par value. C. L. Rimplinger, M. M. Clancy, F. A. Armstrong—all of Wilmington, Delaware. Principal office with Corporation Trust Co. of America, Du Pont Building, Wilmington, Delaware. To manufacture and deal in gutta percha, etc.

Associated Rubber Interests, Inc., January 31, 1919 (New York), \$10,000. C. Byrd, 31 Delap street, Queens, H. C. Schleicher, 76 Pearl street, T. M. Healy, 32 Liberty street, all of New York City—all in New York. To deal in rubber products.

Automatic Safety Tire Valve Corp., The, January 28, 1919 (New York), \$10,000. S. X. Newman, 10 Stone street, Yonkers, G. H. Crossman, Hotel Prince George, New York City, C. R. Tock, 487 Sanford avenue, Flushing—all in New York. To manufacture auto tire valves, etc.

Bayonne Tire & Rubber Co., Inc., February 6, 1919 (New York), \$2,000. S. Bernheim, C. A. Weldon, A. Hirsch—all of 35 Nassau street, New York City. To manufacture tires.

Bridgeport Tire & Rubber Co., Inc., February 1, 1919 (New York), \$10,000. S. Bernheim, S. H. Hartstein, C. A. Weldon—all of 35 Nassau street, New York City. To manufacture tires.

Central New York Tire & Tube Co., Inc., February 1, 1919 (New York), \$20,000. S. H. Hartstein, C. A. Weldon—all of 35 Nassau street, New York City. To manufacture tires.

City Rubber Co., January 18, 1919 (Massachusetts), \$25,000. C. B. Delano, 52 Ivy street, G. F. Duhamel, 5 Boynton street, both of Boston; J. Bradley, 24 Market street, all in Massachusetts. To manufacture and deal in automobiles and motors of all kinds and all parts and appliances used in connection therewith.

Columbus Tire & Rubber Co., Inc., February 1, 1919 (New York), \$5,000. H. S. Hartstein, S. Bernheim, C. A. Weldon—all of 35 Nassau street, New York City. To manufacture tires.

Du Pont de Nemours Export Co., E. I., December 12, 1918 (Delaware), \$100,000. W. S. Gavan, C. R. Mudge, A. M. Gorman—all of Wilmington, Delaware. Delaware agent, A. M. Gorman, 100 Market street, Wilmington, Delaware. To do a general export business, and, among other things, handle products of Du Pont Fabrick Co., Fairfield, Connecticut.

Eckrode Rubber Co., February 6, 1919 (New Jersey), \$100,000. C. E. Eckrode, Highland Park, B. of C. Dodge, 111 South 11th street, G. A. Hensler, 815 South 11th street—both of Newark—all in New Jersey. Principal office, 118-122 Adams street, Newark, New Jersey. Agent in charge, C. E. Eckrode. To make, purchase, and sell rubber boots, shoes, tires and tubes.

Eric Tire & Rubber Co., Inc., February 17, 1919 (New York), \$5,000. C. A. Weldon, C. A. Hirsch—all of 35 Nassau street, New York City. To manufacture tires.

Essex Tire & Rubber Co., Inc., February 11, 1919 (New York), \$4,000. C. A. Weldon, H. S. Hartstein, A. Hirsch—all of 35 Nassau street, New York City. To manufacture tires.

Excello Rubber Heel Mfg. Co., January 9, 1919 (Delaware), \$300,000. F. L. M. E. and L. F. Mettler—all of Wilmington, Delaware. Principal office, 812 Market street, Philadelphia, Delaware. To manufacture and sell rubber heels, soles, shoes, etc.

Fair Tire & Rubber Co., Inc., February 17, 1919 (New York), \$5,000. C. A. Weldon, H. S. Hartstein, C. A. Hirsch—all of 35 Nassau street, New York City. To manufacture tires.

Fresno Tire Sales Co., Inc., February 10, 1919 (New York), \$5,000. C. A. Weldon, H. S. Hartstein, A. Hirsch—all of 35 Nassau street, New York City. To manufacture tires.

Hague Co., F. B., February 14, 1919 (New Jersey), \$125,000. F. B. and S. E. Hague, W. E. Turton—all of Newark, New Jersey. Principal office, 810 Broad street, Newark, New Jersey. Agent in charge, W. E. Turton. To manufacture, buy, sell, import, export, and generally deal in automobile tires, etc.

Marshall Rubber Co., January 8, 1919 (Illinois), \$25,000. T. H. Spencer, C. Wright, J. B. Drueger. Principal office, 2700 South Michigan avenue, Chicago, Illinois. To manufacture and deal in automobile tires and tire accessories.

Kelley Tire & Rubber Co., January 7, 1919 (Delaware), \$1,000,000. E. J. Kelley, C. H. Bortell, Jr., both of New Haven, Connecticut; H. F. Gilg, Wilmington, Delaware. Principal office with Delaware Registration Office, 900 Market street, Philadelphia, Delaware. To manufacture and deal in tires for automobiles, bicycles, etc.

Laconia Tire Co., December 31, 1918 (New Hampshire), \$2,000. S. and A. Malanowski, O. L. Young, M. C. Gilman—all of Laconia, New Hampshire. To buy, sell, and deal in automobile supplies.

Missouri Tire & Rubber Co., Inc., February 4, 1919 (New York), \$5,000. C. A. Weldon, A. Hirsch, S. Bernheim—all of 35 Nassau street, New York City. To manufacture tires.

Modern Tire Co., Inc., January 27, 1919 (New York), \$2,500. N. Chaitowitz, 309 West 50th street, H. Gluschat, 646 East 13th street, H. Eskin, 66 East 101st street—all of New York City.

Newark Tire & Rubber Co., Inc., February 6, 1919 (New York), \$4,000. S. Bernheim, C. A. Weldon, A. Hirsch—35 Nassau street, New York City. To manufacture tires.

New Trend Tire Co., The, January 9, 1919 (Ohio), \$100,000. F. H. Groves, president; S. W. Tidd, ex-vice-president; C. U. Calvin, secretary and treasurer; E. J. Altenberger, general manager—all of Columbus, Ohio. Principal office, 10 Columbus, Ohio. To rebuild and retread automobile tires.

O'Rourke Tire & Battery Corp., February 17, 1919 (New York), \$500. John, and John J., and C. O'Rourke—all of 348 91st street, Brooklyn, New York. Tire and battery service station.

Palace Tire & Rubber Co., Inc., February 17, 1919 (New York), \$3,000. C. A. Weldon, H. S. Hartstein, A. Hirsch—all of 35 Nassau street, New York City. To manufacture tires.

Paterson Tire & Rubber Co., Inc., January 28, 1919 (New York), \$2,000. C. A. Weldon, H. S. Hartstein, A. Hirsch—all of 35 Nassau street, New York City. To manufacture tires.

Peoples Auto Tire & Supply Co., February 10, 1919 (New Jersey), \$50,000. T. H. Reed, 40 Seymour avenue, G. S. Staib, 175 Chadwick avenue, L. G. Miller, 616 Bergen street—all of Newark, New Jersey. Principal office, 435 Clinton avenue, Newark, New Jersey. Agent in charge, L. G. Miller. To conduct a general automobile supply store.

Plaza Tire & Rubber Co., Inc., January 24, 1919 (New York), \$3,000. A. L. Lissner, president; W. L. Lissner, vice-president; J. Jacobs, secretary and treasurer. Address, 382 Jackson avenue, Long Island City, New York. To manufacture tires.

Road Tire & Rubber Co., Inc., February 4, 1919 (New York), \$4,000. C. A. Weldon, A. Hirsch, S. Bernheim—all of 35 Nassau street, New York City. To manufacture tires.

Super Tire & Rubber Co., Inc., February 10, 1919 (New York), \$10,000. A. Paulot, R. Woodson, E. A. Whitely, Elmhurst; W. Hagen, 325 East 51st street, New York City—all in New York. To manufacture tires.

Timpany Rubber Co., Inc., January 8, 1919 (Connecticut), \$20,000. W. A. Timpany, president; O. W. Olsen, secretary and treasurer; M. C. Timpany—all of 504 Bank street (principal office), New London, Connecticut. To buy and sell tires and automobile accessories.

Traveler Rubber Co. of Bethlehem, U. S. A., January 24, 1919 (Delaware), \$1,350,000. E. E. Pollard, J. E. Green—both of Philadelphia, Pennsylvania; S. D. Townsend, Jr., Wilmington, Delaware. Principal office with S. D. Townsend, Jr., 927 Market street, Wilmington, Delaware.

Triangle Rubber Co., February 12, 1919 (Delaware), \$100,000. J. Whan, H. R. Shaffer, C. K. Deimore—all of Sebring, Ohio. Principal office with Capital Trust Co. of Delaware. To manufacture inner tubes, tires, and other rubber accessories.

Union Raincoat Co., Inc., January 31, 1919 (New York), \$20,000. M. Volansky, 1876 Marmon avenue; S. Volansky, 1539 Minford place—both of New York. To manufacture raincoats, Brooklyn—all in New York. To manufacture rubber apparel.

Williamburg Tire & Rubber Co., Inc., February 17, 1919 (New York), \$3,000. H. S. Hartstein, C. A. Weldon, A. Hirsch—all of 35 Nassau street, New York City. To manufacture tires.

World Rubber Products Co., Inc., February 10, 1919 (New York), \$10,000. L. Spieberger, 1237 Hoe avenue; C. H. Herbol, 1071 West Farms road—both of Brooklyn; E. Cohen, 155 Rose street, Brooklyn—all of New York. To manufacture rubber products.

Yonkers Tire & Rubber Co., Inc., February 3, 1919 (New York), \$3,000. H. S. Hartstein, C. A. Weldon, A. Hirsch—all of 35 Nassau street, New York City. To manufacture tires.

TWO NEW DU PONT SUBSIDIARIES.

Two new companies have been recently incorporated to take over the chemical and export business of the Du Pont organization. These are: Du Pont Chemical Co., Inc., Wilmington, Delaware, which will manufacture and deal in chemicals, oils, paints, etc., and the E. I. du Pont de Nemours Export Co., Wilmington, Delaware, which will take over foreign business. The officers of the export organization are: F. W. Pickard, president, in charge of sales; Walter S. Gaven, vice-president and director of sales; F. D. Brown, treasurer; and Alexis I. du Pont, secretary. The directors, in addition to the officers, include F. C. Peters, C. L. Petze, J. A. Burckel and J. E. Hatt.

DOMINION RUBBER SYSTEM INCORPORATES.

The Canadian Consolidated Rubber Co., Limited, Montreal, Quebec, Canada, in order to separate its sales and distribution from its manufacturing department, has incorporated seven provincial companies to handle sales and distribution in Canada, the name in each case being "Dominion Rubber System, Limited," with the name of the province in parenthesis inserted before the word "Limited."

Each company takes over the leases, property, fixtures, stock on hand, etc., at actual valuation, while its policy will be determined by a board of directors made up of members of the head office executive force and the manager of the provincial company.

The officers and directors of the parent company are: T. H. Rieder, president; R. E. Jamieson, vice-president; H. Wellein, A. E. Massie, H. R. Nixon, J. A. Martin, J. M. S. Carroll and W. A. Eden.

The offices, managers, and secretary-treasurers of the provincial companies are as follows, respectively:

Maritime—St. John, New Brunswick; W. R. Stewart, A. R. Hannah.

Quebec—Montreal; George Bergeron, J. Myles.

Ontario—Toronto; J. A. Connor, H. E. Dane.

Manitoba—Winnipeg; Charles Holden, R. W. Pollock.

Saskatchewan—Regina; G. E. Wight, H. A. Wells.

Alberta—Calgary; A. C. McGivern, G. E. Healey.

Pacific—Vancouver, British Columbia; W. A. Allan, J. M. Doyle.

PERSONAL MENTION.

Samuel P. Colt, chairman of the board of directors of the United States Rubber Co., New York City, spent the month of February in California.

Guy E. Tripp, chairman of the board of directors of the Westinghouse Electric & Manufacturing Co., New York City, sailed for Europe early in February.

R. Y. Cooke, who has been connected with the Racine Rubber Co., since 1912, has been promoted to the position of secretary and general manager of the company at Racine, Wisconsin, succeeding the late Mr. Severance. He has also been elected a director of the Ajax Rubber Co., Inc., New York City, of which the Racine company is a subsidiary.

Louis Rosenberg has been appointed director of advertising and sales for the Keystone Tire & Rubber Co., Inc., New York City.

A. P. Gormully has been placed in charge of the export business of the Ajax Rubber Co., Inc., New York City.

F. E. Kaeppl is now representing the mechanical department of the Federal Rubber Co., Cudahy, Wisconsin, among the jobbers of Chicago and the Middle West. He was formerly with the United States Rubber Co. and for seven years was connected with the Chicago plant of the Mechanical Rubber Co., serving the jobbing trade.

A. C. Eggers, manager of the crude rubber department of the Mercantile Bank of the Americas, Inc., 38 Pine street, New York City, was formerly connected with Eggers Bros. & Co., crude rubber dealers, and more recently was production expert in the Signal Corps of the Army.

Mark L. Smith has identified himself as a salesman with Stresen-Reuter & Hancock, Inc., manufacturer of and dealer in colors, minerals, and chemicals for the rubber and allied trades, Chicago, Illinois. He was formerly with the Commercial Chemical Co. and is well acquainted with the chemical trade.

R. J. CALDWELL HONORED BY LUNCHEON.

R. J. Caldwell of R. J. Caldwell & Co., Inc., manufacturer of cotton duck and tire fabrics, New York City, was recently appointed a member of the United States Industrial and Economic Commission and is now in Europe making surveys of the industrial situation. On January 24, the day preceding the sailing of the commission, Mr. Caldwell was the guest of honor at a luncheon at the Lawyers' Club, attended by many men prominent in public life. The opening address was made by Mr. Caldwell, who dealt with industrial conditions, especially with reference to the more equitable treatment of labor. He was particularly emphatic in urging that adequate provision be made to retain workers in their employment in times of stress.

Among the other speakers, all of whom alluded in complimentary vein to the philanthropic and useful work accomplished by Mr. Caldwell in the promotion of better working and living conditions for industrial employees, were W. Bourke Cochran, John B. Stanchfield, George Gordon Battle and Simeon D. Fess, Congressman from Ohio. John Morgan, vice-president and treasurer of the McGraw Tire & Rubber Co., East Palestine, Ohio, and a recently appointed director of The Rubber Association of America, represented the rubber trade.



R. J. CALDWELL.

WEBSTER NORRIS, S. B.

DURING the early eighties, immediately following his graduation from the Massachusetts Institute of Technology, Webster Norris was an analyst in steel and sugar-refining industries. A few years later, as chief chemist of the Chicago, Milwaukee, and St. Paul Railway Co., his attention was directed to the technology of rubber. Personal investigation revealed the need of chemical standardization of the materials, processes and products of rubber manufacture. As result, he became chemist of the Boston Rubber Shoe Co. in July, 1887, and equipped a laboratory at their Malden plant. Thus, if not actually the first, Mr. Norris is one of the early chemists to be regularly employed on the factory staff of an American rubber manufacturing company.



WEBSTER NORRIS.

He was identified with the Boston Rubber Shoe Co. as chemist and assistant superintendent for a combined period of eight years. In 1895, he entered the mechanical goods division of the trade as chemist of the Revere Rubber Co. Subsequently he has been identified in a superintending capacity with several important companies, among them the Gutta Percha & Rubber Manufacturing Co., New York City; the Canadian Rubber Co., Limited, Montreal, Quebec, Canada; the Republic Rubber Co., Youngstown, Ohio, and the New York Rubber Co., New York City.

Mr. Norris has lectured on the technology of rubber at his Alma Mater, and several patents have been granted on his improvements in rubber-working machinery and factory equipment.

When THE INDIA RUBBER WORLD was founded, Mr. Norris promptly recognized it as a factor in advancing the development of the industry, and especially its value to the rubber chemist and superintendent. For many years he has contributed technical articles to its pages and in 1915 became identified with its staff in connection with the chemical department.

Mr. Norris is an expert in rubber factory equipment, processes, and operation. Throughout his career as a rubber technologist he has specialized in scientific compounding, the development of specification goods, and related problems in rubber goods manufacture.

He is engaged in developing long-cherished plans for serving as a consulting rubber technologist for American and foreign rubber manufacturers.

AERONAUTICAL EXPOSITION.

The Annual Aeronautical Exposition of the Manufacturers' Aircraft Association, Inc., will be held March 1-15 in the Madison Square Garden and the 69th Regiment armory, New York City. This exhibit will show the remarkable development of the flying machine from the first Langley and the original Wright machines to the Navy's newest flying boat, with the record carrying capacity of fifty passengers.

The United States Army and Navy Departments, together with the manufacturers, will display every type of airplane built in America during the war, including a complete exhibition illustrating the progress made in aerial ordnance, photography, the use of wireless and other developments. A collection of war trophies and captured German airplanes exactly as they were brought down behind the Allied lines will be exhibited.

The Obituary Record.

INVENTOR OF RUBBER PROCESSES.

CHARLES A. BeSaw of the BeSaw Tire & Rubber Co., Hartsville, Ohio, and Ardmore, Oklahoma, died at Guthrie, Oklahoma, February 6, aged 48 years. The burial was at Canton, Ohio.

Mr. BeSaw was born at Pleasant Grove, near Akron, Ohio. He entered the rubber business in 1900, being employed by the Diamond Rubber Co. in the technical department. In fact, it was in the technical departments almost exclusively in which he associated himself with the Milwaukee Rubber Works Co., Milwaukee, Wisconsin; the Firestone Tire & Rubber Co., Akron, Ohio; Swinehart Tire & Rubber Co., Akron, Ohio, and the Canton Rubber Co., Canton, Ohio. He was general superintendent of the Knight Tire & Rubber Co., Canton, Ohio, when, in 1916, he acquired control of the Quality Rubber Co., Hartsville, Ohio, which name he changed to BeSaw Tire & Rubber Co. and became president and general manager of the organization.

In 1917 the capital of the company was increased to \$1,000,000 and an additional factory was built at Ardmore, Oklahoma, and Mr. BeSaw made his residence in Guthrie, thus taking personal supervision of the business at the Ardmore plant, which, because of his business experience and technical knowledge, rapidly gained prestige and patronage. Mr. BeSaw was the inventor of the BeSaw process for reclaiming rubber, and was instrumental in perfecting several processes for the manipulation of rubber.

MANUFACTURER AND FINANCIER.

Daniel Neil Mason, vice-president and director of The Mason Tire & Rubber Co., Kent, Ohio, died at his residence in Cleveland, Ohio, of pneumonia, February 6, 1919, aged 31 years.

Mr. Mason was one of three brothers, all associated together in several business enterprises, one of which was the Mason Tire & Rubber Co., that was organized in the fall of 1915, and since that time he devoted the major portion of his time to the financial end of the business. He was a partner in Mason Brothers Investment Securities Co., and vice-president in the newly organized Mason Cotton Fabrics Co. Indeed, it is claimed that his extreme enthusiasm in starting this new enterprise caused his last illness.

Mr. Mason was an intense worker. Whatever he did was done with all his might. He was known in financial circles as a wonderfully successful salesman. Young, sympathetic, naturally a leader, he was popular with the workers in the plant, attending the outdoor sports and field days, on which occasions, because of his splendid physique, he participated in athletic sports.

Mr. Mason is survived by his widow and a five-year-old daughter.

A POPULAR AND CAPABLE MAN.

A. C. Redman, industrial manager of The McGraw Tire & Rubber Co., East Palestine, Ohio, died of pneumonia on January 27, 1919. His demise constitutes a lamented loss, not only to the McGraw organization but to the community in which he made his home and took so prominent a part in business life and civic affairs.

Previous to 1914, when he entered the employ of the McGraw company as traffic manager, Mr. Redman spent a number of years in the service of the Adams Express Co.

He was distinguished for his moral courage, energy, devotion to duty, and fair dealing—qualities which endeared him to his associates and won for him popularity and success as an executive of rare ability. As industrial manager, Mr. Redman came in constant daily touch with the employees, winning their confidence and respect in marked degree. It is the purpose of the McGraw company to execute his plans for the betterment, socially, physically and industrially, of its workmen.

Mr. Redman was a native of Circleville, Ohio, born June 15, 1885, and is survived by his father, widow, and two children.



A. C. REDMAN

A DIRECTOR OF THE CANADIAN CONSOLIDATED RUBBER CO., LIMITED.

Andrew A. Allan, a director of the Canadian Consolidated Rubber Co., Limited, of Montreal, Quebec, Canada, died at the Royal Victoria Hospital in that city Tuesday, February 11, 1919, following an operation performed the previous week.

He was the son of Andrew Allan, one of the founders of the Allan Line of steamships plying between Montreal and England. He was born in Montreal on June 16, 1860, educated at Rugby, England, and later by private tutors in France. He began business in the office of the Allan Line in 1877, admitted a partner in 1881 and later, with his brother, succeeded his father's interests. In 1910 he was elected president of the Shipping Federation of Canada and was for a time a member of the Montreal Board of Harbor Commissioners. He became a director of the Canadian Consolidated Rubber Co., Limited, in 1917, and was interested in a number of important industrial and financial corporations in Canada.



ANDREW A. ALLAN.

A SELF-MADE MAN.

Frederick R. Gillespie, of Hamill & Gillespie, dealers in compounding ingredients, etc., New York City, died at his residence in that city January 28, aged 74 years. He was born in Ireland, coming to New York when a boy, and entered the employ of the concern of which he was the head at the time of his death. He is survived by his widow and two daughters. Mr. Gillespie



DANIEL N. MASON.

was a man of large charities, was active in church work, and was highly respected by the trade.

FORMER TRENTON RUBBER MAN.

James D. Brady, formerly an official of the Standard Rubber Co., Trenton, New Jersey, died on January 2 at his home in Philadelphia, Pennsylvania, following an illness from typhoid fever. His body was interred in Riverview Cemetery, Trenton, New Jersey. Mr. Brady was 40 years old and is survived by his widow. He was a member of the Masonic fraternity and was active in Republican politics. After disposing of his interests in the Standard Rubber Co., he engaged in the coal business in Philadelphia.

A JAPANESE RUBBER IMPORTER.

Shunzo Takaki, a member of the firm of Mitsui & Co., Limited, crude rubber importers of Tokio, Japan and New York City, died in the latter place on January 29, aged 36 years.

The son of Baron Kanhiro Takaki, he was born in Tokio in 1883, and received his early education in that city. Coming to America he attended the University of Pennsylvania where he distinguished himself in athletic sports, especially tennis and baseball.

After his graduation he returned to Japan, married Miss Tatsuo Mitsui and allied himself with the great firm of Mitsui & Co., later returning to this country and settling in New York City. He was a member of the Nippon Club, the Japan Society, the Railroad Club, Aldine Club, and University of Pennsylvania Club, all of New York City. He leaves his widow and four children.

A REAL RUBBER BANK.

TIME was when rubber manufacturers approached banks with trepidation, or at least with a feeling of respectful gratitude, for they were big borrowers. It is also a matter of history that one large bank in New York said flatly and almost



THE FIRESTONE PARK TRUST & SAVINGS BANK

profanely that it would never again touch anything in rubber.

The notable change that has come to the trade is shown not only in the bank directorships held by rubber men, by the eagerness of the banks for rubber accounts, but in a more spectacular way by the big rubber bank founded by Harvey S. Firestone, president of the Firestone Tire & Rubber Co., Akron, Ohio.

This institution is known as the Firestone Park Trust & Savings Bank. It was first established as the Rubber City Savings Bank in September, 1916, in temporary quarters on South Main street, but now occupies a large, new and handsome two-story fireproof building with every modern banking facility. At the end of that first month total deposits were only \$32,140.60



HARVEY S. FIRESTONE, BANK PRESIDENT

as compared with \$2,307,686.61 at the end of 1918. These figures speak eloquently of the place this institution is taking in the remarkable development of southern Akron and the neighboring towns of Kenmore and Barberton. Founded on broad, sound banking principles and ably by the treasurer, L. B. Waters, a banker of wide experience, it is rendering an important service to the individuals and business houses of the community.

The officers of the bank are: president, Harvey S. Firestone; vice-president, J. G. Robertson; treasurer, L. B. Waters, secretary, E. A. Oberlin, Jr.; directors, Harvey S. Firestone, J. G. Robertson, F. W. Albrecht, John Hearty, L. B. Waters, Jacob Pfeiffer, J. M. Beck, J. W. Thomas, S. G. Carlshuff.

In common with most banking institutions it has well-organized commercial, foreign, savings, trust, safety deposit and legal departments managed by expert banking specialists. Also it maintains a steamship and foreign travel department for the benefit of foreigners, their families abroad and Americans planning extended business or pleasure trips; a real estate department which, under the style of the Coventry Land & Improvement Co., handles most of the real estate affairs of Firestone Park, and a payroll room for the use of industrial clients.

Excellent financial condition was indicated by the statement of December 31, 1918, which follows:

RESOURCES.

Cash on hand and in banks	\$1,455.47
United States Treasury	55,414.41
Bonds and other securities	\$1,164,000.00
Loans secured by mortgages	\$1,187,802.28
All other loans and accounts	1,000,000.00
Accruals	1,000,000.00
Real estate	1,000,000.00
Furniture and fixtures	1,000.00
	\$2,664,473.63

LIABILITIES.

Capital stock	\$50,000.00
Surplus	50,000.00
Deposits	2,307,686.61
U. S. Savings	110,000.00
Deposits on United States Treasury Bonds	110,000.00
	\$2,664,473.63

THE RUBBER TRADE IN OHIO.

By Our Special Correspondent.

LIEUTENANT-COLONEL A. B. JONES, of The B. F. Goodrich Co., Akron, has returned from overseas where he has been Deputy Commissioner of the Red Cross in France and in charge for the last three months of all Red Cross work in that country. He resumes his duties as director of plant administration for the Goodrich company, feeling that the Red Cross has done a man-sized job during the four years of the world war.



LIEUTENANT-COLONEL
A. B. JONES.

There were approximately 6,500 people in the Red Cross organization in France, about half of them women. The monthly expenditure was \$5,000,000, of which Mr. Jones had the supervision. The overhead administrative cost, including salaries, of which there were few among the executives, amounted to perhaps three per cent. of the total.

Mr. Jones says that the whole story of the Red Cross is one of innumerable instances of devotion, loyal service, and fine intelligence. It was the Red Cross that revived the morale of the French in 1916 when the soldiers returned home on leave to find their families starving. The Red Cross looked after the families and so put new heart into the men.

After the armistice was signed the first job was to get the American prisoners out of Germany. There were only 3,500 of them and the Red Cross got them all back in 10 days.

H. L. Zimmerman has been promoted to the position of traffic manager for The B. F. Goodrich Co., Akron.

The balloon room of The B. F. Goodrich Co., Akron, has been converted into a gymnasium and will be in charge of the Athletic Association, of which Edward Connelly is athletic director. Three basket-ball courts will be laid out as well as spaces for volley ball and hand ball. Noon-day dances are being held in the new gymnasium.

The Goodrich organization will play independent baseball this season, not having become identified with the newly formed league of industrial athletes.

The B. F. Goodrich Co. has added ten more names to the list of its pensioned employees. The terms of service of these men range from eight to 43 years.

* * *

Robert T. Griffith, general superintendent of the Miller Rubber Co., Akron, has been elected to membership on the Board of Education to succeed Dr. J. H. Seiler, resigned.

* * *

J. F. Barnett, manager of the crude rubber department of the Firestone Tire & Rubber Co., Akron, has gone to Singapore to investigate banking and financial conditions as well as to visit rubber plantations and study planting conditions in that locality. He will probably be absent six months.

W. W. Wright will represent the export department of the Firestone Tire & Rubber Co., Akron, in Singapore, to which he has recently gone.

William Tecuwen will represent the Firestone Tire & Rubber Co., Akron, in the Dutch East Indies as a salesman.

John B. Tuttle, head of the research department of the Firestone Tire & Rubber Co., Akron, has become abstractor of rubber literature in the department of rubber and allied substances for "Chemical Abstracts," published by the American Chemical Society. He succeeds Raxley F. Weber, recently deceased.

R. J. Firestone has resigned as vice-president and director of sales of the Firestone Tire & Rubber Co., Akron, but retains his interest in the company and membership on the board of directors.

* * *

The Faultless Rubber Co., Ashland, had a pleasing exhibit of its rubber toys and balloons on display at the toy show held at the Imperial Hotel, New York City, during February. The display was in charge of A. H. Otis, the former European representative of the company. One of the features of the exhibit was "Sweetie," one of the company's red rubber dolls, in half-size, three inches tall instead of six. Another interesting toy was a red balloon of extra quality rubber which an individual could inflate to a diameter of approximately 18 inches, but which it was said could be inflated by pressure to 27.

* * *

The United States Government has taken over Wingfoot Lake for a central training station for lighter-than-aircraft. The Goodyear Tire & Rubber Co.'s control of the property will terminate June 1, 1919. At this station there have recently been about 275 men in training, of whom half were enrolled in the Navy, being instructed in observation work and the operation of dirigible balloons. It is said that this will be the only training station of the kind in the United States. Early in February thirty men were graduated, on which occasion balloon races were held between pilots and Goodyear company officials made addresses. In future, only West Point and Annapolis graduates are to be eligible to train at Wingfoot Lake, under government ruling.

The Goodyear Tire & Rubber Co., Akron, has made the following appointments in its export department: C. L. Diers, former Indianapolis district manager, now manager of European division of export department, covering all activities of the company in Europe, Asiatic Russia, and the northern coast of Africa; C. H. Williams, former Chicago branch manager, now manager of Far Eastern division, covering the Philippines, China, Japan, Java, Siam, India, and Eastern Russia; A. G. Cameron, former St. Louis branch manager, now manager of Australasian division, covering Australia, New Zealand, and South Africa. Although this work will be carried on mainly from the Akron offices, these men will personally visit their respective fields at regular intervals to familiarize themselves with merchandising conditions and requirements.

The Silent Club, composed of mute employees of The Goodyear Tire & Rubber Co., recently opened club rooms in the building opposite the factory office of the company. This is perhaps the only club of the kind in the country. The facilities of the new quarters include reading and lounging rooms, pool tables, and the usual club-house features. On the opening night the club gave a smoker and open-house party at which the mute athletic organization furnished the entertainment. The Goodyear company employs about 300 mutes in various departments.

* * *

The Mohawk Rubber Co., Akron, recently elected the following officers: R. M. Pillmore, president; J. K. Williams, vice-president; M. E. Mason, secretary; C. W. McLaughlin, treasurer; and S. S. Miller, factory manager. These also constitute the board of directors, together with Messrs. H. L. Rose, Francis Seiberling and George A. Parkér, who were reelected.

* * *

O. L. Travis has been appointed sales manager for The Owen Tire & Rubber Co., Bedford, Ohio.

Casper Smith, sales director of the Katzenbach & Bullock Co., New York City, recently called on the trade in Akron and other points in Ohio. * * *

D. W. Brown has resigned his position as advertising manager of The Republic Rubber Corp., Youngstown, Ohio, to devote his entire attention to his weekly publication, the "Youngstown Citizen." He is succeeded by Honor Blocker, who for two years has been Mr. Brown's understudy and assistant. * * *

Charles E. Wood, dealer in crude rubber, 149 Broadway, New York City, announces that, owing to a change of name of the building where the Akron office is located, correspondence should be addressed to the Akron representative at 328 Central Savings & Trust Building instead of 328 Hamilton Building. * * *

The New Tread Tire Co., Columbiana, has been recently incorporated, as noted elsewhere in this issue. It is equipping with modern machinery a two-story brick building with about 20,000 square feet of floor space for a factory where it will rebuild and retread auto tires. The officers of the company are: F. H. Groves, president; S. W. Tidd, vice-president; C. U. Calvin, secretary and treasurer; and E. P. Altenburg, general manager. The capital stock is \$100,000. * * *

At a recent meeting of the stockholders of The Mansfield Tire & Rubber Co., Mansfield, Ohio, George W. Stevens was elected vice-president and general manager, succeeding George W. Henne who retires from the office to direct his attention to other interests, although he retains his place on the board of directors. Mr. Henne is president of the New Jersey Car Spring & Rubber Co., Inc., Jersey City, New Jersey, which he reorganized some months ago. Mr. Stevens was formerly with the Federal Tire & Rubber Co., Milwaukee, Wisconsin. * * *

The Mansfield Tire & Rubber Co., has elected the following officers: Judge C. R. Grant, president; George W. Stevens, vice-president and general manager; Jesse E. LaDow, secretary; Charles Hoffman, treasurer; and A. C. Moore, assistant treasurer. * * *

The Rotary Tire & Rubber Co., Columbus, with factory at Zanesville, has made Barton Griffith treasurer of the company and Charles W. Bryson and Mr. Griffith are two of its directors. * * *

The Sandusky Tire & Rubber Co., formerly at Sandusky, Ohio, has changed its name to The Ohio State Rubber Tire Co., and is now located at Port Clinton, Ohio. S. M. and W. O. Bruess are interested in the company. * * *

The National Tire & Rubber Co., East Palestine, Ohio, is building a large addition to its factory, in which it plans to manufacture two new brands of high-grade guaranteed tires for the jobbing trade. * * *

This company has just arranged for life insurance for its employees along the lines followed by other similar companies, the policy costing the employee nothing and increasing in value automatically with the employee's increased length of service. * * *

The Bucyrus Tire & Rubber Co., Inc., Bucyrus, Ohio, has changed its name to Henderson Tire & Rubber Co., Inc., but the officers and organization remain the same. * * *

Samuel L. McClune, Cleveland, Ohio, has been elected a director of The McGraw Tire & Rubber Co., East Palestine, Ohio. * * *

The Gordon Rubber Co., Canton, Ohio, at its annual meeting elected the following directors: Samuel Ake, E. A. Bowman, Judge Henry W. Harter, C. J., C. W. and W. E. Keplinger, H. B. McMaster, J. F. O'Dea, and C. H. Renkert. The directors

have elected the following officers: H. B. McMaster, president and general manager; C. K. Keplinger, vice-president; C. J. Keplinger, secretary and treasurer. The company is now manufacturing only automobile tires and tubes, having disposed of its druggists' sundries business. * * *

THE RUBBER TRADE IN MASSACHUSETTS.

By Our Regular Correspondent.

A SPECIAL meeting of the foremen and executives of the Stoughton Rubber Co., Stoughton, Massachusetts, was held at the office of the plant January 29, at which Ira F. Burnham, for more than 40 years at the head of that factory, introduced as his successor C. L. Wanamaker, a young man who had been specially fitted for such a position by intensive practical education. He is a graduate of Dartmouth College, and also of the Tuck School of Business Administration and Finance, and his practical education in the rubber business was acquired at Naugatuck and New Haven, Connecticut, Williamsport, Pennsylvania, and Cambridgeport, Massachusetts. He is thus well-trained in both technical and administrative duties. * * *

Mr. Burnham will still live in Stoughton, and will, to a certain extent, hold an advisory position in connection with the Stoughton Rubber Co., but being relieved of the detail, will be able to devote himself to the perfection of a new plan, and the installation of a new department of the United States Rubber Co. * * *

At the meeting, as special guests and representatives of the general management of the United States Rubber Co., were: Myron H. Clark, general factory manager; Arthur T. Hopkins, assistant general manager footwear division; Charles T. McCarthy, secretary to Mr. Hopkins; and W. D. Holden. * * *

Edwin H. Kidder, manager of the Boston branch of the United States Tire Co., who has been in military service for several months, has returned to civilian life, and resumed the duties of the above office. Mr. Kidder is one of the best known and most popular men connected with the tire industry in Boston, and he received a royal welcome on his return to business. * * *



EDWIN H. KIDDER.

Following the resignation of W. B. Gleason as secretary-treasurer of the Revere Rubber Co., Chelsea, Massachusetts, John D. Carberry was chosen secretary and W. H. Blackwell treasurer, with offices in New York City. F. L. Bunker as assistant treasurer has his headquarters at the plant in Chelsea. * * *

The United States Rubber Co. has sold a large plot of land in Chelsea to the Winnisimmet Land Co., which will improve and develop it for a ship-yard. Situated in the down-town section of the city and extending to the Harbor Commissioners' line, the property is admirably fitted for such use. Containing over 90,000 square feet, it is pronounced one of the finest pieces of wharf property in the city, and was assessed at \$109,700. It is said that the price paid was largely in excess of that figure. The plots (there were two of them), were not being industrially utilized by the United States Rubber Co. at the time of the sale. * * *

The C. & C. Raincoat Co., formerly at East Boston, but which has a factory on Washington street, Boston, has purchased a tract of land in Stoughton, Massachusetts, on which it proposes to erect a two-story factory, 200 feet long and 40 feet wide, mill construction, in which to manufacture raincoats and over-

alls. The contract for the erection of the factory has been signed, and it is stated that the work will be pushed forward so that the company can transfer its business within a few months, when 200 hands will be employed.

* * *

Revere Building, 60-66 High street, which houses the mechanical department of the United States Rubber Co. in Boston, was the scene of a rather lively fire on February 9. The blaze was confined to the fourth floor, occupied by the American Toilet Goods Co., and owing to the fireproof and waterproof construction of the building, the rubber concern's portion of the premises suffered but an inconsiderable inconvenience and little damage.

* * *

The Rubber Manufacturers' Mutual Insurance Co. held its annual meeting in this city on January 22, 1919, and re-elected the five directors whose terms expired on that date, thus continuing the board of directors and the officers as before. The officers are: Arthur H. Lowe, president; George B. Hodgman, vice-president; Benjamin Taft, secretary and treasurer. The directors include, besides the above, Marcus Beebe, C. C. Converse, E. H. Clapp, F. W. Pitcher, H. E. Converse, C. T. Plunkett, J. P. Stevens, C. A. Stone, B. F. Peach, E. Frank Lewis, and Lester Leland. The affiliated companies, namely the Industrial Mutual Insurance Co. and the Cotton and Woolen Manufacturers' Insurance Co. of New England, held annual meetings on the same date, and re-elected the same boards of managers and officers that had served the previous year.

* * *

Lieutenant Leon A. Field, who, before entering service was assistant to the master mechanic of the Boston Rubber Shoe Co., was given a complimentary dinner at the Aldine, Melrose, Massachusetts, late in January, by his immediate business associates of Factory No. 2. George L. Lawrence, Jr., factory manager, was toastmaster, and several short addresses were made. Lieutenant Field gave a very interesting account of his experiences overseas.

Lieutenant Field was born in New Hampshire July 11, 1891, and attended the public schools in Biddeford, Maine, graduating from the University of Maine, at Orono, that state, in 1914, and at once commenced work at the factory of the Boston Rubber Shoe Co. Entering the Third Officers' Training Camp in January, 1918, he was commissioned second lieutenant the following March, sailing for Brest March 21. He served at Southampton, the tank training center for all British tanks, also at Havre, Beauvais, and Tours, and was in action at Soissons. He celebrated Christmas, 1918, by sailing for the United States, and was recently mustered out at Camp Humphrey, Virginia.

* * *

The Hood Tire Sales Co. was organized in Watertown, Massachusetts, about a year ago, for the sale of Hood Tires. About the first of last month the concern opened a store at 1041 Commonwealth avenue, in the automobile section of Boston, where are carried in stock all sizes and treads of the Hood Rubber Company's tires. With a sales force and mechanical staff a lively season is expected.

D. Janion MacNichol, the new president and manager of the Hood Tire Sales Co., makes his headquarters at this Boston store. Mr. MacNichol was formerly New England manager of the Chicago advertising agency concern of Critchfield & Co., a position he relinquished to assume the management of the tire sales company.

* * *

Henry Chase Hopewell, son of the late John Hopewell, and connected with the carriage cloth firm of L. C. Chase & Co., Boston, was married last month to Miss Hilda Prince, daughter of James P. Prince, of Lexington, this state. Owing to the illness of his mother, the wedding was a quiet one.

Only a few days later his mother died at her residence in Newton. She was born in Springfield, Massachusetts, in 1844, and was married to John Hopewell October 20, 1870. The family resided in Cambridge for nearly 30 years, part of which time Mr. Hopewell was mayor of that city. She leaves three sons, Charles F., Frank B., and Henry C. Hopewell and two daughters, Mrs. Mabel G. Casselberry and Mrs. Nellie H. Colby.

* * *

The foremen and assistant foremen of The Fisk Rubber Co., Chicopee Falls, gave a banquet at the Worthy Hotel, Springfield, on the evening of February 1, 1919. About 150 employees of the company were present.

* * *

The Hewitt Rubber Co. of Massachusetts, recently incorporated, has opened a salesroom at 48 Gloucester street, to handle the New England sales of Hewitt tires, manufactured by Hewitt Rubber Co., Buffalo, New York. W. S. Carleton, formerly with the Republic Rubber Co., but who for the last nine months has been in the service of the United States Shipping Board in Philadelphia, is manager. Associated with him are F. M. Broadhead, for the last year or more with the 101st Engineers, in France, and T. H. Morgan, both of whom were formerly identified with the Republic Rubber Corp.

THE RUBBER TRADE IN NEW JERSEY.

By Our Regular Correspondent.

THE Eckrode Rubber Co., of Newark, has been incorporated at Trenton with a capital stock of \$100,000 to engage in the manufacture of automobile tires, tubes and other rubber goods. The officers are Clement Eckrode, Highland Park, president; G. F. Hensler, Newark, vice-president; A. G. Hensler, Newark, secretary and treasurer. A large factory has been leased at 118-20-22 Adams street, Newark, where a large number of hands will be employed. Mr. Eckrode formerly was in charge of the Endurance tire plant at New Brunswick, New Jersey, which has been taken over by the Hardman Rubber Co.

* * *

Charles E. Stokes, vice-president of the Home Rubber Co., has been appointed chairman of the War Council of the Episcopal diocese of New Jersey. The diocese is seeking to raise \$250,000 for work among the army camps.

* * *

Herbert H. Coleman, of East Orange, New Jersey, president of the Delion Tire & Rubber Co., Trenton, sailed for France on February 18 on a business trip of about five weeks.

* * *

The Lambertville Rubber Co., Lambertville, New Jersey, has just completed an addition to its plant. The building is of concrete and will be used for storage purposes.

* * *

Clement Ehret, general auditor of The Empire Rubber & Tire Corp., who recently resigned to accept a position in New York City, was presented with a handsome diamond cluster scarf pin by the office force. The presentation was made by H. E. Berrien, the cashier of the concern. Mr. Ehret has been connected with the Empire company since 1917.

* * *

William J. B. Stokes, treasurer of the Thermoid Rubber Co., has been made chairman of the committee to solicit funds for the erection of a new \$1,000,000 hotel at Trenton. He has also been made president of the new hotel company. The following rubber companies have subscribed toward the project: United & Globe Rubber Manufacturing Co., Luzerne Rubber Co., DeLaski & Thropp, Circular Woven Tire Co., DeBlois Tire & Rubber Co., Woven Steel Hose & Rubber Co., Semple Rubber Co., Louis Destribats, manager Ajax Rubber Co., Inc., William H. Servis, vice-president of the Hamilton Rubber Manufacturing Co. William J. B. Stokes and his brother, J. Oliver Stokes,

treasurer of the Joseph Stokes Rubber Co. and the Home Rubber Co., head the rubber list.

* * *

Lionel Emdin, the founder of the Delton Tire & Rubber Co. plant at Trenton, announces that he will shortly break ground at Asbury Park for the erection of a rubber plant for the Victory Tire & Rubber Co. The factory will be located on Third and Fourth avenues and will have a siding running to the Central Railroad. The new plant will be of brick, two stories high and about 80 by 175 feet, with a daily capacity of 200 tires and tubes. Nothing but high-grade goods will be made, all having 6,000-mile guarantee. The necessary machinery has been ordered and it is expected that the new plant will be in operation in June.

* * *

Ensign George T. Oakley, naval aviator, son of Clifford H. Oakley, president of the Essex Rubber Co., has been assigned to inactive duty and has returned home from Pensacola, Florida. Ensign Oakley enlisted April 25, 1917, as a second-class seaman and was assigned to the U. S. S. *Niagara*. After being in the service for several months he went into the aviation section, United States Naval Reserve Force, and was trained at the Massachusetts Institute of Technology for a pilot. He was then sent to Pensacola for final flying work after training at Bay Shore, Long Island. He was making a flight at Key West when his aircraft fell into the ocean. He was rescued with another aviator.

* * *

William J. B. Stokes, president of the Thermoid Rubber Co., has been appointed chairman for Mercer County, this state, for the Fifth Liberty Loan, which begins Easter Monday. He was chairman of the last loan campaign and did splendid work.

WELLMAN-SEEVER-MORGAN CO. ELECTS OFFICERS.

The Wellman-Seever-Morgan Co., Cleveland, Ohio, at its annual meeting of stockholders on February 18, 1919, reelected the following directors: Edwin S. Church (president and general manager), F. E. Borton, W. H. Cowell (secretary and treasurer), F. B. Richards, S. T. Wellman, E. H. Whitlock, S. H. Pitkin (vice-president), Francis Seiberling, and F. A. Seiberling. George W. Burrell was elected second vice-president and will have charge of the company's works at both Cleveland and Akron.

CROSS COUNTRY TIRE CO., INC.

The Cross Country Tire Co., 343 Babcock street, Buffalo, New York, manufactures rebuilt auto tires from select carcasses that have been prematurely discarded. These are first repaired, then relined and a new cushion, breaker, tread and side wall applied. The line includes various non-skid tire designs. R. M. Loewenthal is president, and Jack Sider, secretary, of the company.

F. R. HENDERSON & CO. OPEN OFFICES IN SINGAPORE AND BATAVIA.

That fair business dealing and American enterprise are productive of commercial success is shown by recent developments in the firm of F. R. Henderson & Co., crude rubber importers, New York City and Akron, Ohio.

Francis R. Henderson, the head of the concern, has recently returned from a six months' business sojourn in the Far East, having visited the Federated Malay States, Straits Settlements, Java and Sumatra.

Mr. Henderson spent three months in Singapore where he acquired the property and business of the International Trading Co., Limited, that was merged in the new firm of Henderson Brothers Limited, Singapore, Straits Settlement. While in Batavia he established the firm of Henderson & Keulemans, Limited, (Handel Maatschappij Henderson & Keulemans.)

Batavia, Java. The associate, G. J. M. Keulemans, is a Hollander with broad experience in plantation rubber and well known by planters in the Far East.

THE RUBBER ASSOCIATION'S EFFICIENT SECRETARY.

IN the last five years many men have accomplished much for the good of the rubber trade. Of these successful workers a prominent place belongs to the secretary and treasurer of The Rubber Association, Harry Stephen Vorhis. At this time, therefore, a sketch of his career is of interest.

Mr. Vorhis was born in Spencer, New York, in 1873. After attending Spencer Academy and Franklin Academy at Prattsburgh, New York, he entered Yale University, graduating in 1895. During his college life he worked on the staff of the "Journal & Courier," a well-known New Haven paper. He later studied for a year at the New York Law School. Newspaper work was his ambition, however, and he served in various news and advertising positions previous to joining the staff of the New York "Sun" in 1900. Five years later he left to work on various New York and Boston financial and trade papers.

Two years before the great war The Rubber Association enlarged its scope and leaders in the rubber trade felt that a competent secretary was needed to carry out the plans they had formulated. The choice fell upon Mr.



H. S. VORHIS.

Vorhis and this selection has proved a wise one.

At the beginning of the European war complications regarding rubber imports resulted in the Association becoming advisory to the British Consul in New York City, to whom all crude rubber entering this country was consigned, and later the entire matter of receiving and allocating was turned over to the Association. How well this matter has been handled is too well known in the trade to need comment here. The work required the organization of a force of 50 or more employees, all under Mr. Vorhis' direct charge. Mr. Vorhis does not belong to the Secretaries' Union nor does he know anything about the eight-hour day. His office day over, he is usually to be found at the Union League, the Yale, or the Lotus, or wherever important rubber committees are to be found. There he answers questions, produces documents and makes a careful record of discussions, of suggestions, wise and otherwise, and of final decisions. Then, when the rest sleep, he puts the matter into shape against the demands of the morrow. He never rests, never complains, never "leaks." As an earnest, tireless worker he is without par, and has carried out the plans of the rubber committees, big and little, with unvarying intelligence and efficiency. With it all he is modest, likable and extremely popular.

RUBBER SUBSTITUTE FACTORY IN NORWAY.

Det Tekniske Finansindustri, Christiania, has acquired the sole right for Scandinavia to manufacture a rubber substitute from materials found in Norway. This is said to have been tried for many years, and is expected to be of great importance to Scandinavian rubber consumers, as it costs not more than a fraction of the price of real rubber. The company was started with a capital of \$134,000, and is now increasing it to \$576,000.

RUBBER IMPORTS INTO ST. PIERRE-MIQUELON.

Rubber footwear imports into St. Pierre-Miquelon, for 1917, amounted to \$16,076 from Canada, \$14,930 from the United States and \$183 from France.

Activities of The Rubber Association of America.

MANUFACTURERS ASKED TO SUPPORT ASSOCIATION
REVENUE PLAN.

January 28, 1919.

ONLY a few years ago and just prior to the war the Rubber Association organization consisted of a secretary and one stenographer. The income of the Association in 1912 amounted to \$1,616.25, and was derived from initiation fees and dues. The expenses of the Association during that year amounted to \$829.90. For the year of 1918 the income was \$213,203.82 and the expenses \$199,614.75. In other words the Association has in a few short years grown from a social organization into a broad, active organization vitally representing the interests of the industry. The expenses due to war work have ceased. The revenue due to this same cause is about to cease. Much of the work started during the war can be continued for the benefit of the industry provided arrangements can be made to provide the necessary funds.

At the annual meeting it was unanimously voted to continue the work and provide funds by a tax upon crude rubber. The general feeling was that this assessment should be three (3) cents per hundred pounds. This will provide for an income somewhat in excess of present requirements and will enable the Association to increase its permanent investment fund. If at any time in the future this fund reaches such an amount that the income from it is sufficient to pay the running expenses then the assessment could be discontinued.

An assessment on crude rubber purchased by manufacturers is an eminently fair method of raising funds, inasmuch as it equitably distributes the burden among the large and small manufacturers and goes into the cost of all alike. Three cents per 100 pounds is only .0003-cent per pound, .0006 per cent on 50-cent rubber, and yet this small amount if paid by all will yield a revenue of approximately \$100,000 per year to the Association. It would obviously be unfair for some to pay and others not to pay and still derive the same benefits. This assessment will take effect January 20, when the old charge was abolished, and it is therefore hoped that all manufacturers will agree to the revenue plan which is enclosed herewith. Please have it signed by an official of your company and returned to the secretary in the enclosed envelope.

The manufacturers are the important beneficiaries of the proposed work of the Association. The importers are also benefited but in a smaller degree and it was the sense of the meeting that in acting as a collection agency for the fund they would be doing their part.

It is proposed to have a published list of manufacturers signing the agreement and a copy of this will be given each manufacturer as well as each importer, dealer, and broker.

THE SECRETARY.

MANUFACTURERS' AGREEMENT.

From (name of manufacturer).

(Address.)

To The Rubber Association of America:

We hereby agree to pay to The Rubber Association of America an amount equal to three (3) cents per hundred net pounds of crude rubber purchased by us.

If purchasing is made through an importer, dealer, or broker, we hereby authorize the charging of this amount on the invoice with the understanding that said importer, dealer, or broker will, upon receipt, remit the amount thus collected to The Rubber Association of America.

We further agree to make a confidential quarterly report to the secretary of the Association which will show the amounts collected from us for the account of the Association, by the various importers, dealers and brokers.

It is understood that the figures shall be available only to the secretary and auditor of the Association. It is further understood that any surplus remaining after paying the current expenses shall be invested and added to the permanent funds of the Association.

In the case of direct importations of crude rubber made by us we agree to remit to The Rubber Association of America an amount equal to three (3) cents per hundred pounds on all rubber so received.

It is further understood that funds so collected shall be held and used only for the common good of the members of The Rubber Association of America, and that the continuation of

this assessment shall be considered at the annual meeting of the Association.

THE RUBBER ASSOCIATION OF AMERICA.

By

(Signature of manufacturer.)

FIRM MEMBERS' BALLOT ON TRUST LEGISLATION.

February 15, 1919.

To the firm members:

By direction of the board of directors, we are enclosing you herewith a copy of Referendum No. 26 of the Chamber of Commerce of the United States of America on the report of the Federal Trade Committee of the Chamber regarding Trust Legislation.

This recommends (1) consideration by Congress of all anti-trust legislation, (2) formulation of standards of general business conduct to be administered by a supervisory body, (3) an enlarged Federal Trade Commission of nine instead of five members, (4) which should be made the supervisory body. It is, therefore, of immediate importance that an expression of the opinion of the best business minds of the country be obtained regarding this highly pertinent subject.

On the enclosed ballot, we would ask that you register your opinion with regard to the several questions asked, and return to the secretary not later than March 14, 1919.

THE SECRETARY.

BALLOT.

REFERENDUM No. 26 OF THE CHAMBER OF COMMERCE OF THE UNITED STATES OF AMERICA.

To The Secretary of the Rubber Association of America:

Dear Sir:

We desire to record our vote on the proposal of the Chamber of Commerce of the United States of America as noted below:

I. The committee recommends that Congress should at once consider the situation of all statutes constituting our anti-trust legislation.

In favor

Opposed

II. The committee recommends there should be formulated standards of general business conduct to be administered by a supervisory body.

In favor

Opposed

III. The committee recommends that an enlarged Federal Trade Commission should be made the supervisory body.

In favor

Opposed

IV. The committee recommends that the membership of the Federal Trade Commission should be increased from five to nine.

In favor

Opposed

Attest:

(Signature of Firm Representative.)

FREIGHT TRAFFIC PERMITS FOR DOMESTIC FREIGHT.

February 14, 1919.

To all firm members:

Your attention is directed to the following advices issued by the Allegheny and Eastern Regions of the United States Railroad Administration respecting the cancellation on February 15 of the permit system now applicable on domestic freight for New York.

Please cancel, effective February 15, 1919, the embargoes placed as a war emergency January 15, 1918, against carload domestic freight for Manhattan Island, the Bronx (New York City) and station deliveries on New York Harbor, including Brooklyn Terminal Companies, which freight is now being moved under F. T. C. permits issued by the Freight Traffic Committee, North Atlantic Ports.

Effective as above such freight may move without permits subject to embargoes of the delivering railroads.

No change will be made in the method of permitting export carload freight for the present; and carload domestic freight must not be accepted for other than regular station deliveries. Reconsignment for export or lighterage deliveries will not be allowed.

MANAGER, TRAFFIC DIVISION

The Rubber Trade in Great Britain.

By Our Regular Correspondent.

RAW RUBBER.

SUPPLIES of Brazilian fine rubber are now coming to hand since shipping has become available. There is still, however, considerable delay at the ports, rubber which arrived in Liverpool in the first week of December not reaching the rubber works until the middle of January. This rubber was bought at a considerably higher price than to-day's quotations, but of course the future position could not be foreseen and supplies had to be assured. Now the premium on Brazilian is much lower than it was, the determining factor being shipping facilities. Rubber works generally seem to be pretty well supplied for their raw product and there is little buying at the satisfactory price of 2s. per pound. Indeed, there is a good deal on hand and more to come forward at 1s. 9d. per pound, and in some quarters there is a disposition to wish that the price would rise. There does not seem much chance of this, however, as long as the blockade of Germany continues and until the factories of Germany, Austria, and Russia get into full swing again. I hear of quite a large inquiry for raw rubber from Switzerland, which seems somewhat strange as this is not a manufacturing country.

TRADE CONDITIONS.

The past month has been characterized by much the same conditions as the preceding. There is a halting tone in the rubber trade as in most others, the fixation of contracts being deferred for the more favorable prices which buyers are always anticipating in the following week. With regard to the home rubber trade, the armistice came at the worst time of the year and general business has not progressed according to expectations. In fact, there is a good deal of pessimism to be met with because expenses and taxes show no signs of diminution with the cessation of so much government business. Government work naturally has not come to an end; even in peacetime there is always business doing and there will be for some time large armies to be equipped. One or two classes of rubber goods, particularly those where spreading is concerned, have had their production entirely stopped, leaving a good deal of plant capacity idle, but in a general way the proofoers by working ordinary hours and stopping all overtime have been able to dispense with any drastic dismissal of employees.

RUBBER CARD CLOTH.

In the November issue I referred to the rubber card cloth in which a large business has always been done between British manufacturers and Continental spinners. This trade was naturally much upset by the war and it does not look as if it would be resumed as quickly as was expected. This is entirely because of price. The material is wanted badly by the numerous mills which are now being rebuilt and put in order in Belgium and France and plenty of inquiries and orders have come to England. However, these have reference to pre-war prices which are quite out of the question on account of the rises in cotton, steel, and labor. Like many other rubber goods, the rubber in card clothing, though a most important component, does not form the whole or even the major part of the finished articles, so the fact that there has been no rise in the price of rubber has not a great bearing on the matter. Buyers no doubt will come to recognize that higher prices will have to be paid, but at the time of writing there is absolutely nothing doing in the Continental business referred to.

LABOR CONDITIONS.

The high rates of wages paid to munition workers and the numerous bonuses granted to workers of almost all kinds on

account of the increased cost of living have caused a general upset in the labor world and on all sides one reads of persistent demands for higher wages, in nearly all cases coupled with a request for shorter working hours. This hardly looks promising for a large increase of trade at competitive prices, though I think it may be taken for granted that the same sort of thing will be experienced to a greater or less extent all over Europe. The engineers' demand for a 47-hour week with no work before breakfast having been generally conceded, the cotton and other large industries are agitating in the same direction. It is stated by the men that there will be no diminution in the output, this being rather suggestive of slackness in the past. The employers say that they will not be able to check this statement until some months, possibly a year, has passed under the new conditions. The 48-hour week having been established, there is now talk of a 44-hour week. So far these movements have affected only the fringe of the rubber trade, *i. e.*, the mechanical shops found in the larger works, but no doubt the whole trade will shortly be affected.

A good deal of resentment is shown by British workers at having to pay income tax and there is a strong disposition in some quarters to keep earnings below the taxable limit. In America I understand the case is different and the work people earn as much money as they can. This means that output is maintained and no doubt increased, while the action of our workers has the opposite effect. It is this rise in the cost of labor that must effectively prevent any return to pre-war prices in the case of almost every article of expenditure, whatever may be the fluctuation in the price of materials.

DUROPRENE.

This is a new varnish put upon the market by the United Alkali Co., Limited. Although its composition is not divulged in the trade circulars which extol its many desirable properties, it is understood to consist largely of the hydrochloride of caoutchouc, or whatever may be the correct designation of the white body produced by the action of chlorine upon rubber. The kaloid derivatives of rubber have now been known for many years in the chemical laboratories, but it is only in the last year or two that they have been put to commercial use, the pioneer in this movement having been S. Peachey, of Manchester. Duroprene is a thick viscous liquid which may be thinned by various diluents if the purchaser for special purposes so desires. A strong point is made of its noninflammability, and it has found favor as a fireproof dope as well as for varnishing wood and metal work of all kinds as a precaution against damp. It is claimed that its noninflammable character makes it superior to most agents as a waterproofing medium. I do not know whether this is capable of replacing rubber in this connection, but it is a quite new application of rubber. The price for single gallons is 14s., while for 100 gallons it is reduced to 12s. 6d. per gallon f. o. b. works, which are at Widner, Lancashire.

THE SOLVENT POSITION.

The contracts for solvent naphtha for 1919 run about 2s. 9d. per gallon, a considerable reduction from the prices of the last two years, but still much higher than is liked in the now closely competitive spreading branch of the trade. The increased use of coal-tar products for mixing with petrol for motor purposes has had the effect of keeping up prices for the former. Thus benzol, which is now free from government control, is quoted at 2s. 6d. per gallon, though it may be taken for granted that this price will come down as further stocks of petrol become available. Benzol has never been at all popular with proofoers

and at the present price they are not inclined to look at it, though the case might be different if it were half the price of solvent naphtha. This question of the supply and price of solvents is closely connected with pleasure motoring, about the immediate revival of which quite diverse opinions are expressed. I am disposed to agree with those who say that it will be some time before we see anything like the pre-war rate of pleasure motoring because the prices all around, including hotel accommodations, are much higher and the increase in the income taxes is not to be ignored.

THOSE RUBBER TEATS.

A good deal of correspondence, of course politically flavored, has been going on with regard to the sending to Germany of a million rubber teats by the Women's International Association. I do not know the name of the British firm which filled the order, but it must be one of three or four which I have in mind, because these goods are not made in many of our works. I understand that the distribution is in the hands of the Red Cross. I have not made any calculation as to what weight of rubber is involved, but I think that those people who imagine that a large number of motor tires will promptly make their appearance in Berlin are alarming themselves needlessly. Anyway, the house to house collection and subsequent reclaiming will not be done in a day.

BARYTES.

The price of barytes has gone up very much during the war, owing to the imports from Germany and Belgium having ceased, and it is a matter of importance to British users to see what is going to happen under peace conditions. A rise from £2 to £8 is no trifle, as the principal users who are in the paint trade have found. The main facts as regards British production are that there is plenty of the raw material at home and that the output has increased by about 30,000 tons in the last three years. A large amount of this was used in the rough for lithopone manufacture, a material for which the large demand in the rubber trade has now declined. A large number of new mines have been started and several new grinding mills put up. Only a certain proportion of the British output is the best white quality and the makers are apprehensive that they will not be able to keep their present profitable business unless they are secured by tariff against foreign imports. The paint trade and possibly the rubber trade are not so keen against foreign competition and as far as I can judge the situation the authorities are inclined to conjure the British producers to see if they cannot manage to meet foreign competition better than they did before the war, especially if improved transport facilities become available. This barytes question, of course, is only one of many industries in which producers have for the first time formed themselves into an association for the furtherance or protection of their interests and which interests are not those of the consumer of these products.

TIRE IMPORTS IN BRITISH SOUTH AFRICA.

During 1917, tires were supplied to British South Africa by the United Kingdom of a value of \$1,374,227, Great Britain being the principal source of supply, with 53 per cent of the total imports to its credit. Imports from the United States increased from \$692,114, in 1916, to \$705,681, in 1917, and a material gain resulted to French and Italian manufacturers, imports of their goods increased by 71 per cent compared with the figures of 1916.

VENEZUELAN BALATA EXPORTS IN 1917.

During the second half of 1917, balata ranked fourth in value among the products exported from Venezuela, the total amounting to 3,719,633 bolivars, equivalent to \$717,889.17 in United States currency, a bolivar amounting to \$0.193.

LATEX-COLLECTING CUPS.

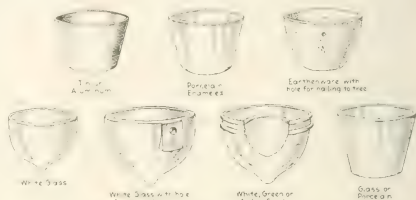
IN the development of the plantation rubber industry, quality of product is recognized as an important factor in the realization of profits. This has led to the utilization of carefully devised tools, machinery, and methods for every phase of the working processes, from the latex to the finished material packed for export to the rubber goods manufacturer.

In the scheme of development the simple latex cup employed at the tree for collecting the latex, has received considerable attention. Satisfactory latex cups are now obtainable, principally of English manufacture, in a variety of forms, dimensions, and materials.

VARIETIES OF CUPS.

The forms are commonly circular with tapered sides, to admit "nesting," and have inside rounded bottom.

Some are convex tapered and others are oval like the blossom end of a half lemon. Some forms show a flattened or inwardly



TYPES OF LATEX-COLLECTING CUPS.

curved surface on one side for close accommodation to the tree trunk, and others are provided with a hole for nailing to the tree.

The dimensions are variable from three to four inches in diameter. The porcelain cup used on certain large estates has the following measurements: diameter of top, four inches; diameter of bottom, 2½ inches; depth, three inches; thickness of wall, ¼-inch. The materials from which latex cups are made are tin, iron, aluminum, glass, porcelain, and earthenware.

In use the cups to receive the latex flow rest on the ground under the spout or are supported against the tree by a wire or cord encircling both cup and tree trunk. Many estates have the initials of the company on the outside surface of their cups. Prominent among many different styles and sizes of cups used in the Far East may be mentioned the half-round porcelain form. This cup is four inches across the top and two inches deep, with ⅝-inch walls and flat outside bottom to prevent its overturning when placed on the ground.

METHOD OF USE.

The method of using the latex cup varies on different estates. As received, cups come in boxes containing about 500. They are unpacked, inspected, and marked at the coagulating station. The cups, when distributed to the different trees, one for each, are hung on a piece of wire from the tree, or on top of a sharp-pointed stick stuck in the ground near by. After the tapping cut has been made the cup is placed underneath the sheet metal spout, either on the ground if the tapping is low or on wire formed into a loop encircling the tree.

The latex thus collected in the cup is emptied out and as much as possible removed with a squeegee. The cup is then washed in clean water and returned to the wire holder, or pointed stick, with the mouth down.

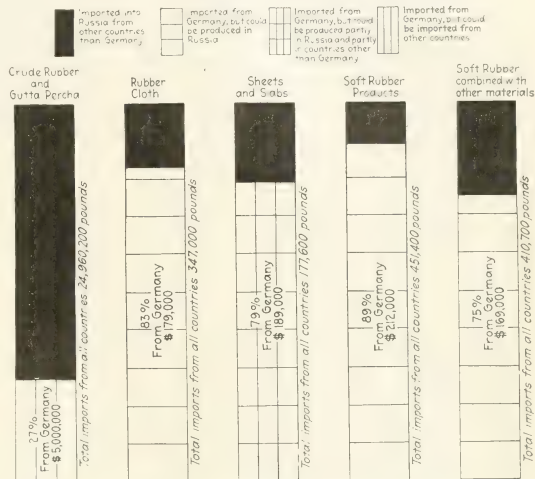
Several American concerns have recently given their attention to the manufacture of latex cups for which there is a large demand from rubber planters.

Russian Trade Possibilities.

AN eminent Russian authority on economics, Professor Joseph M. Goldstein, of the Moscow High Institute of Commerce and Industry, and of the University of Moscow, stated seventeen years ago in a report to Count Witte that if Russia did not radically change her foreign policy she would become, in effect, a German colony. Previous to the present war this result had actually taken place as shown by Germany's preponderating control of Russia's import trade in all classes of manufactures. Previous to 1914 Russian import trade amounted to \$600,000,000 annually and official statistics indicate that Germany was constantly gaining increasing control of this trade. Now with the country disorganized, Russia's imports will amount to \$1,500,000. Here is a magnificent opportunity for the Allies to free Russia from German economic domination on a purely business basis.

In the statistics presented by Professor Goldstein, those of interest to American rubber manufacturers include the following classifications, representing the total rubber and rubber goods importations by Russia for 1913 and the large proportion controlled by Germany.

RUBBER GOODS IMPORTED INTO RUSSIA



	Total Pounds Imported from All Countries	Imported from Germany Per Cent.	Value.
Crude rubber and gutta percha....	24,960,200	21	\$500,000
Rubber cloth	347,800	83	179,000
Soft rubber sheets and slabs.....	177,600	79	189,000
Products of soft rubber.....	451,400	89	212,000
Soft rubber combined with other materials.....	419,700	75	169,000
Totals	26,347,700		\$5,749,000

In the case of machinery in which rubber is component or accessory the figures are as follows:

	Total Pounds Imported from All Countries	Imported from Germany Per Cent.	Value.
Threshers, etc	284,000	32	\$252,000
Locomotives and motor wagons.....	64,400	94	320,000
Typewriters	23,100	64	450,000
Cycles (2 wheel)	18,900	85	724,000
Motor cycles	1,500	80	175,000
Automobiles	3,300	79	4,740,000
Totals	395,200		\$6,661,000

In the matter of certain minerals and chemicals, Germany's trade with Russia averaged 71 per cent of the total in those lines in 1913 and aggregated a value of \$1,719,000. The materials referred to included tars, pitches, asphalt, mineral wax, paraffine, sulphur, sulphuric acid, bisulphide of carbon, benzol, aniline and caustic soda. These are all utilized to greater or lesser extent in rubber manufacture as well as in other lines.

Russia will have need to import manufactured goods for an indefinitely long time, and it is imperatively necessary for the world's security that Germany be prevented from gaining economic control of Russia.

CEYLON RUBBER.

In 1908 the shipments of Ceylon rubber amounted to less than a million pounds; nine years later, in 1917, the figure increased to over 75,000,000 pounds, exceeding the previous record year of 1916 by nearly 30 per cent, compared with the increase in value of approximately 23 per cent.

Average rubber prices for the five years 1913 to 1917 were as follows: \$0.62 per pound in 1913, \$0.46 in 1914, \$0.54 in 1915, \$0.58 in 1916, and \$0.48 in 1917. Owing to the dislocation of exchange the first rubber auction in the chamber of commerce marts was not held until February 23, and then payment was in London sterling drafts instead of Indian rupees. This condition of payment prevailed at all the sales throughout the year. There was, however, a fair amount of business done in private sales. First quality crepe opened at \$0.58, advancing steadily to \$0.68 per pound by April. Prices then declined until the beginning of August, when first-quality crepe auctioned at \$0.47 per pound. In November the price recovered to \$0.52, but in December it again fell, until the highest price paid was \$0.40 per pound. For the first three months of the year crepe had an advantage of about \$0.03; in April prices were about the same; in May smoked sheets were relatively a cent higher; in August they reached a point of about \$0.03 higher; but during the rest of the year crepe was level with or higher than sheets.

The United States and United Kingdom took approximately equal shares of Ceylon-grown rubber, the two countries consuming close to 95 per cent of the colony's entire rubber production. (Commerce Reports Supplement, December 17, 1918.)

"RUBBER MACHINERY" BY HENRY C. PEARSON, FILLIED WITH valuable information for rubber manufacturers. Price \$6.

Recent Patents Relating to Rubber.

THE UNITED STATES.
ISSUED DECEMBER 10, 1918.

- N** 1,287,145. Boots and shoes with liners actuated by rubber band forced through interior passages. M. R. Harrison, New York City.
- 1,287,149. Respirator. J. Saracino, LaPorte, Ind.
- 1,287,152. Anesthetic mask. W. P. Walter and D. G. McCurdy, Evanston, assignors by mesne assignments to Safety Anaesthesia Apparatus Concern, Chicago—both in Ill.
- 1,287,157. Exercising dummy device with inflated body. W. P. Armstrong, Washington, D. C.
- 1,287,159. Demountable rim for tires. C. W. Foster, chloride, Ariz.
- 1,287,184. Guide-film structure for balloons. J. R. Gammeter, Akron, O., assignor to The B. F. Goodrich Co., New York City.
- 1,287,285. Stuffing-box for balloon cords. J. R. Gammeter, Akron, O., assignor to The B. F. Goodrich Co., New York City.
- 1,287,288. Pocket drinking cup. S. R. Gayton, assignor of $\frac{1}{4}$ to M. R. Clark, both of Philadelphia, Pa.
- 1,287,295. Baby pacifier. H. F. Guenther, Cleveland, O.
- 1,287,404. Test-cup for milking-machine. C. Oden and J. G. G. Eklund, assignors to The Universal Milking Machine Co.—all of Columbus, O.
- 1,287,408. Dust cap for inflating valves, with soft-rubber gripper. R. M. Peterson, Akron, O., assignor to The B. F. Goodrich Co., New York City.
- 1,287,475. Hose supporter. W. A. Simmons, St. Louis, Mo.
- 1,287,490. Tube connection for hot-water bottles. W. B. and V. D. Smith, Detroit, Mich.
- 1,287,511. Wind-shield wiper. P. W. Swan, North Yakima, Wash.
- 1,287,536. Fountain pen. E. G. Woody, Brooklyn, N. Y.

REISSUES.

- 14,584. Inner tube for pneumatic tires. J. P. Brophy, assignor to Pneumatic Rubber Inner Tube Co., both of Boston, Mass. Original No. 1,208,906, December 19, 1916.
- ISSUED DECEMBER 17, 1918.**
- 1,287,658. Electric mixing cable. C. R. Evans, Akron, O., assignor to The B. F. Goodrich Co., New York City.
- 1,287,694. Fire with core designed to prevent rim-cutting. O. L. Huffman, Westfield, Mass.
- 1,287,702. Match-box combined with tobacco container of rubberized fabric. J. La Follette, Pringle, S. D.
- 1,287,708. Lock for demountable rims. O. Le Beau, Montreal, Que., Can.
- 1,287,724. Demountable rim. W. M. Marselles, Clinton, Mo.
- 1,287,666. Rubber tennis ball. A. T. Saunders, Chicopee, Mass., assignor to A. G. Spaulding & Sons, Jersey City, N. J.
- 1,287,779. Rubber-band-operated figure toy. F. R. Springer, Chicago, Ill.
- 1,287,802. Cushioned wheel. G. Walther, Dayton, O.
- 1,287,909. Fountain pen. N. R. Dennis, Ensley, Ala.
- 1,287,948. Rubber vacuum cup for holding wash-board legs in place. M. C. Clark, Piedmont, Cal.
- 1,287,951. Pneumatic tire. A. L. Fry and F. C. Nagel, Seward, Neb.
- 1,288,061. Hot-water bottle. A. H. Leighton, McMinnville, Ore.
- 1,288,097. Air-valve and method of manufacture. C. V. Martin, Norwalk, O.
- 1,288,109. Resilient retector for pneumatic tires. S. F. Millard, Norwalk, Conn.
- 1,288,148. Hose coupling. J. M. Oden, Brooklyn, N. Y.
- 1,288,155. Dust guard for pneumatic tire valves. M. F. Patton, Tuscon, Ariz., assignor to A. Schrader's Son, Inc., Brooklyn, N. Y.
- 1,288,161. Sectional tire. W. W. Pezzyear, Savannah, Ga., assignor of $\frac{1}{4}$ to L. W. High, Wilson, N. C.
- 1,288,204. Hose clamp. A. Rossetta, Jerome, Ariz.
- 1,288,231. Vacuum cup support. T. R. Seglem, Duluth, Minn.
- 1,288,415. Pneumatic tire. V. K. Hober, Freelon, N. Y.
- 1,288,445. Pneumatic seat for motorcycles, etc. H. Seibel, Los Angeles, Calif., assignor to United Air Spring Co. of Arizona, Phoenix, Ariz.
- 1,288,446. Pneumatic seat for motorcycles, etc. H. Seibel, Los Angeles, Calif., assignor to United Air Spring Co. of Arizona, Phoenix, Ariz.
- 1,288,447. Pneumatic support for motorcycle seats, etc. H. Seibel, Los Angeles, Calif., assignor to United Air Spring Co. of Arizona, Phoenix, Ariz.
- 1,288,451. Kite, captive, or observation balloon with inflatable tail portions. C. F. Smyth, assignor to Connecticut Aircraft Co.—both of New Britain, Conn.
- 1,288,457. Inflatable suit. Taken Hattori, Bellows, Calif.

ISSUED DECEMBER 24, 1918.

- 1,288,528. Wheel rim for tires. F. L. Darling, Long Beach, Calif.
- 1,288,647. Respirator mask. F. L. Miller, Idaho Springs, Colo.
- 1,288,687. Garment supporter. A. F. Sager, Milwaukee, Wis.
- 1,288,694. Cream remover. B. G. Somerville, Bronx, N. Y.
- 1,288,696. Cap and clip for fountain pen. H. J. Upton, Medford, Mass.
- 1,288,719. Fountain pen. G. F. Brandt, assignor to Moore Pen Co.—both of Boston, Mass.
- 1,288,727. Tire rim. C. S. Bryant, assignor to The Standard Parts Co.—both of Cleveland, O.
- 1,288,818. Chasteness mask with elastic inserts. C. E. Dudley, Philadelphia, Pa.
- 1,288,833. Oxygen-inhaling device. H. J. Easley, Waterloo, Ia.

- 1,288,856. Respirator. L. Farr, El Portal, Calif.
- 1,288,857. Life preserver with inflatable air-containers. L. Farr, El Portal, Calif.
- 1,288,865. Waterproof coat. C. E. H. Freese, Pittsfield, N. H., assignor to Globe Manufacturing Co., a corporation of New Hampshire.
- 1,288,949. Rubber-tired caster wheel. E. T. Malloy, assignor to The American Caster Co.—both of Hamilton, O.
- 1,288,960. Armored pneumatic tire. F. J. Mix, assignor of $\frac{1}{4}$ to D. E. Hoagland—both of Boulder, Colo.

REISSUES.

- 14,577. Rubber and fiber composition shoe sole. L. F. Montgomery, Fort Recovery, assignor of $\frac{1}{4}$ to J. E. Grosjean and $\frac{1}{4}$ to J. L. Matis, both of Lima—both in Ohio. Original No. 1,212,985, January 16, 1917.
- 14,579. Dust cap for valve stems. C. T. Shaffer, San Francisco, Calif., assignor by mesne assignments to A. Schrader's Son, Inc., Brooklyn, N. Y. Original No. 1,191,840, July 18, 1916.

ISSUED DECEMBER 31, 1918.

- 1,289,106. Rubber-shoe sole with dispressing pockets and ribs. H. Bullock, Andover, assignor to Converse Rubber Shoe Co., Malden—both in Mass.
- 1,289,231. Gartha for knickerbockers. V. L. Munro, Highland Park, Ill.
- 1,289,269. Umbrella cover with elastic end. W. W. Rucker, Portland, Ore.
- 1,289,445. Shoe heel. V. B. Greco, Waterloo, Ia.
- 1,289,463. Puncture-proof pneumatic tire. D. F. Hervey, Logansport, Ind.
- 1,289,476. Life-preserver suit. L. V. Kevick, New York City.
- 1,289,478. Automobile tire. J. Kozak, Milwaukee, Wis.
- 1,289,586. Cushion wheel. M. T. Weston, New York City.
- 1,289,630. Demountable tire rim. E. R. Bresler, Amanda, O.
- 1,289,647. Wind-shield wiper. J. W. Cain, Chicago, Ill.
- 1,289,662. Improved rubber-shoe sole. M. H. Clark, Hastings-on-Hudson, N. Y., assignor to Goodyear's Metallic Rubber Shoe Co., Naugatuck, Conn.
- 1,289,706. Nipple for nursing bottle. W. J. Eggers; Mary J. Eggers, administratrix of W. J. Eggers, deceased, Brooklyn, N. Y.
- 1,289,734. Clincher rim for tires. E. H. Hares, Brooklyn, assignor of $\frac{1}{4}$ to Hayes-Dienderfer Co., Inc., New York City, both in New York, and $\frac{1}{4}$ to G. F. Pickup, New Haven, Conn.
- 1,289,839. Life-saving garment. E. M. Lowy, assignor to Lowy Life Saving Suit Corp.—both of New York City.
- 1,289,921. Fountain pen. S. M. Rowe, assignor of $\frac{1}{4}$ to L. R. Shafer—both of Cincinnati, O.
- 1,289,929. Automobile tire. E. G. Schleicher, Stamford, Conn.
- 1,289,958. Rim for pneumatic tires. B. Tamburello, New York City.

ISSUED JANUARY 7, 1919.

- 1,290,695. Shoe heel. E. M. Cook, Oberlin, O.
- 1,290,113. Spring tire with rubber tread. V. Deisenhofer, Chicago, Ill.
- 1,290,128. Quick tire-ratch for pneumatic tires. C. O. Duffy, Dallas, Tex.
- 1,290,159. Pad for typewriter feet, with rubber plug. S. Foster, Porto Bello, Jamaica, B. W. I.
- 1,290,211. Demountable rim for automobile tires. J. L. Jensen, Cowley, Wyo.
- 1,290,243. Valve for pneumatic tires. I. Kornetsky, Chelsea, and D. P. Sullivan, Boston—both in Mass.
- 1,290,365. Self-filling fountain pen. F. Scheibelecker, assignor to Sale Brothers—both of New York City.
- 1,290,426. Bicycle saddle with air cushions. A. P. van Leuven, The Hague, Netherlands.
- 1,290,453. Resilient cushioned tire. J. S. Williams, Philadelphia, Pa.
- 1,290,164. Windshield cleaner. S. C. Wolfe, Angola, Ind.
- 1,290,519. Resilient wheel with pneumatic tubes. J. T. Cowan, Pittsburgh, Pa.
- 1,290,534. Device for filling fountain pens. P. P. Flournoy, Bethesda, Md.
- 1,290,548. Fountain pen, with ink-tublet container. W. Graves, Alameda, Calif.
- 1,290,556. Demountable rim for tires. C. St. Hilaire, Gardiner, Mass.
- 1,290,582. Tire valve. H. P. Kraft, Ridgewood, N. J. (Original application divided.)
- 1,290,608. Bicycle seat with elastic inserts. F. H. Lowman, Los Angeles, Calif.—both in Cal.
- 1,290,693. Sectional tire casing. C. M. Verling, Centerville, Wash.
- 1,290,627. Garment supporter. H. J. Smart, Derby, assignor to Robert N. Bassett Co., Inc., Shelton—both in Conn.
- 1,290,678. Rubber supporter button. H. J. Stuart, Derby, assignor to Robert N. Bassett Co., Inc., Shelton—both in Conn.
- 1,290,724. Shoe heel. G. M. Anderson, Washington, D. C.
- 1,290,733. Shoe heel with elastic body. F. A. Nolan, St. Paul, Minn.

THE DOMINION OF CANADA.

PUBLISHED NOVEMBER 30, 1918.

- 162,733. Shock-absorber for aircraft. The Carter, Vaughan, and Munro Corp., Buffalo, assignor of Nelson W. Dalton, Garden City, Long Island, N. Y., U. S. A.
- 162,736. Chewing gum. The Ellis-Post Co., Montclair, assignor of Harry J. Nassimian-Weber, East Orange, both in N. J., U. S. A.
- Machinery Patents on page 307.

- 187,397. Nipple for nursing bottles. M. C. B. Poore, née Buchanan, Boston, Mass., U. S. A.
- 187,449. Wheel with pneumatic cushion between bushing and rim. J. Grepp and A. Romanach, co-inventors, both of Buenos Aires, Argentina.
- 187,470. Reinforced tire casing. A. H. Gualer, Evanston, Ill.
- 187,565. Detachable rubber heel with washers for locking into position. Lavers Heels Patents, Limited, assignee of C. W. Lavers, both of Halifax, Nova Scotia.
- 187,566. Detachable rubber heel having slotted plate embedded therein for attaching to shoe heel. Lavers Heels Patents, Limited, assignee of C. W. Lavers, both of Halifax, Nova Scotia.
- 187,574. Machine packing made of rubber-impregnated canvas derived from waste vehicle tires. G. W. Beldam, Ealing, Middlesex, England.
- 187,597. Rubber-heel foot with vacuum cup for holding washboard in place. M. C. Frank, Piedmont, Calif., U. S. A.
- 187,646. Fountain-pen cap and clip. The Conklin Pen Manufacturing Co., Toledo, O., assignee of H. H. Mooney, Hinsdale, Ill., U. S. A.
- 187,656. Rim for vehicle wheels. The Standard Parts Co., assignee of O. H. Joshi, administrator—both of Cleveland, O., U. S. A.
- 187,674. Sole protector made of combined vulcanized fiber, rubber, etc. F. Marah, Leeds, assignor. W. Hey and J. W. Meadowcroft, both of York, each an assignee of 1/3 interest—all in England.

THE UNITED KINGDOM.

ISSUED DECEMBER 30, 1918.

- 120,109. Removable rubber pads for crutches, etc. F. C. Lynde, 11 King street, Manchester.
- 120,109. Hair trimmer or safety razor, made of vulcanite, or similar substance. A. J. Mainwaring, 4 Park Place, St. James, London.
- 120,117. Rubber pads for crutches, etc. F. C. Lynde, 51 King street, Manchester.
- 120,148. Band for attaching rubber pipe to metal pipe. W. H. Clegg, 135 Broadhead Road, Burnley.
- 120,162. Rubber cup for supporting cross-piece of crutches. J. Curwood, Maxwellton, New Road, Littlehampton, Sussex.

ISSUED DECEMBER 31, 1918.

- 120,297. Rubber sole reinforced by canvas, wire, etc. F. Giesse, 11, Upper Parliament street, Nottingham.
- 120,336. Electric insulators. H. Wade, 111 Hutton Garden, London. (Societa Metallurgica Italiana, Leghorn, Italy.)
- 120,374. Tire cover. Berendson's Section Tire Syndicate, 16 Valerinsplein, Amsterdam. (Not yet accepted.)

ISSUED JANUARY 8, 1919.

- 120,462. Inflatable bag for striding. F. and R. Schanz, 56 Margaret street, Oxford Circus, London.
- 120,485. Rubber-insulated electric cables. C. J. Beaver, Rangemore, (recently Road, Hale, and E. A. Harcourt, Broom Cottage, High Legh, both of Cheshire. (Addition to No. 114,872.)

ISSUED JANUARY 15, 1919.

- 120,589. Solid composite rubber tires. Dunlop Rubber Co. and J. V. Worthington, 14 Regent street, Westminster.
- 120,603. Fluid-tight joint for staying control-cord of gas-envelope valve. H. Lord, 1 Chelmsford street, Coppice, Oldham.
- 120,604. Pneumatic arm rests for crutches. F. A. Pennington, 10 Halesden Road, Heath, Chapel Stockport, and T. K. Day, Bankfield, Davyhulme—both in Cheshire.
- 120,658. Golf ball. W. J. Mellers-Jackson, 28 Southampton Buildings, London. (Revere Rubber Co., 59 Rector street, New York City, U. S. A.)
- 120,667. Rubber-lined clip for repairing burst water pipes, etc. E. Hanf, 71 Hatherley street, Brimsca Park, Liverpool.
- 120,693. Apparatus for producing corrugated roofing tiles, with rubber wiper rolls. J. Adams, 80 Dover Road, Northfleet, Kent.
- 120,707. Tire cap for shoe, with staggered apertures for rubber inserts. A. G. Knight, 9 Mount Nod Road, Streatham Hill, London.
- 120,751. Puncture-preventing rubber and vulcanite band for pneumatic tires. J. E. Frost, Cadz, O.

ISSUED JANUARY 22, 1919.

- 120,837. Stuffing-box substitutes, with rubber diaphragm. W. E. Savery, Ivy Bank, Middleton Hall, King's Norton, Birmingham.
- 120,864. Plastic composition for artificial limbs, toys, etc., having elastic strips molded therein for operating. F. E. Eaton, 27 Newtown avenue, Blackrock, County Dublin.
- 120,874. Artificial feet with rubber cushions between parts. J. F. Rowley, 25 West Madison street, Chicago, Ill., U. S. A.
- 120,902. Electric cables with rubber sheath. W. T. Henley's Telegraph Works Co., 13 Bedford street, London, Wall, and H. Savage, 27 Westcombe Park Road, Blackheath, both in London.

ISSUED JANUARY 29, 1919.

- 120,979. Tire tread composed of flexible metal band vulcanized to tread of solid rubber tire. H. L. Harding, Hill View, Queen's Road, Loughton, Essex.
- 121,028. Rubber reservoir nib for pens. H. Swann, Upper Court, Kemerton, near Tewkesbury.
- 121,043. Attachable soles, heels, etc., made by vulcanizing a layer of rubber. (Inventor's name not given.)
- 121,043. Canvas from tire covers or waste balata.
- 121,043. Electric insulator with rubber washer. W. A. Davis, 48 King's Gardens, West End Lane, London.
- 121,051. Rubber pad for protecting boots, etc., with studs to permit attachment. H. T. Stephens, Tahoonia, Ferryside, Carmarthenshire.
- 121,067. Abnormal belt with elastic sections. F. G. Baugatz, 37 Boulevard des Capucines, Paris, France.
- 121,110. Saw-tooth non-slipping resilient heel. B. W. Beckett, 333 Corydon Road, Cleveland Heights, Ohio, U. S. A.

- 121,147. Rubber-diel suction device for artificial dentures. A. W. Fisher, Bryn Estyn, Whitechurch, Shropshire.
- 121,190. Container for paste, etc., having rubber cap perforated to admit air. F. M. Upward, 86 Estcourt Road, Woodside, London.

THE FRENCH REPUBLIC.

PATENTS ISSUED (WITH DATES OF APPLICATION).

- (January 17, 1918.) Adaptation of an air chamber in all the crevices of artificial legs. P. Jacquemin.
- (January 15, 1918.) Wheel with rubber hub for vehicles in general and motor trucks in particular. Savona Pietro del Luigi & Co.
- (July 9, 1917.) Improvements in the manufacture of airplane parts. Goodyear's India Rubber Glove Manufacturing Co., Naugatuck, Conn., U. S. A.
- (January 15, 1918.) Improvements in pneumatic tires to permit inflation while in motion. P. O. J. Knerden.
- (May 14, 1915.) Insulating gloves. Societe Anonyme des Etudiess Industriels.
- (January 30, 1918.) Improvements in resilient wheels. J. L. Harden.
- (February 1, 1918.) Life-saving costume. C. J. E. Chamion.
- (February 1, 1918.) Improvements in rubber pads for horse shoes. E. Linfield, W. H. Goldfinch and A. W. Capener.
- (February 21, 1918.) Portable insubmersible apparatus for walking on water. L. B. H.
- (February 6, 1918.) Improvements in fittings for horse-shoes. R. P. Gray.

NEW ZEALAND.

ISSUED DECEMBER 12, 1918.

- The nature composition. Puncture Cure, Limited, 11, 18th Avenue, Auckland, assignee of E. Campbell and F. Cashman, all of Galesburg, Alta, Can.

TRADE MARKS.

THE UNITED STATES.

- 109,541. The word SASSAR, chewing gum and chewing gum covered with candy. Frank H. Fleer Corp., Philadelphia, Pa.
- 109,541. The representation of a bell bearing the slogan 2 IN 1—retroflexed rubber and fabric. Bell 2 in 1 Tire Co., Richmond, Va.
- 109,678. The word COM superimposed on one end of a double-outlined diamond-folding containers of waterproof cloth, etc. E. B. Nathan, New York City.
- 108,905. The word TASSO within a compass formed geometrical figure. W. C. Webb, Philadelphia, Pa.
- 110,830. The words THE VICTOR—rubber and fabric outer casings for automobile tires and inner tubes. The Victor Rubber Co., Springfield, O.
- 111,161. The words CREAGLY LUNKER—inspirators. J. B. Neuburger, New York City.
- 111,268. The words EVA-GAIR above the representation of an eagle within a circle—repair patches for tires, inner tubes, and other rubber goods. P. Hoerr, Peoria, Ill.
- 111,961. Representation of an arrow passing from left to right across the word HOOP—rubber boots, shoes, and overshoes, and rubber-soled canvas shoes. Hood Rubber Co., Watertown, Mass.
- 111,965. Same as No. 111,964—rubber cushion and pneumatic tires and tubes, and tire-repair patches or reinforcements. Hood Rubber Co., Watertown, Mass.
- 112,333. The letters B B C—rubber or rubber and fabric tires and tubes. The Brunswick-Balke-Collender Co., Wilmington, Del., and Chicago, Ill.
- 112,339. The words OVER THE TOP—waterproof cotton fabrics. The Landers Brothers Co., Toledo, O.
- 113,043. The representation within a rectangle of a flask and liqueur glass besides the word TIGER, each letter of the word being inclosed with circles graduated in size—chewing gum. S. Zimetbaum, New York City.
- 113,075. The word DRYER, each letter of the word being in outlined letters and the second shaded—electric insulated weatherproof wires and friction tape. Central Electric Co., Chicago, Ill.
- 114,095. The word DRAGON, each letter of the word being in outlined letters and the second shaded—respirators. The Hygeia Respirator Co., Passaic, N. J.
- 114,110. The words ASBESTO-SPONGE—boiler and pipe covering. H. W. Johns-Manville Co., New York City.

DESIGNS.

THE UNITED STATES.

- 120,725. Tire. Patented December 10, 1918. Term 14 years. J. F. Arnold, assignor to Dunlop Tire and Rubber Goods Co., Limited—both of Toronto, Ont., Can.
- 120,731. Tire. Patented December 10, 1918. Term 14 years. T. J. Edwards, Akron, O.



- 120,728. Tire. Patented December 10, 1918. Term 14 years. T. J. Edwards, Akron, O.
- 120,749. Pneumatic tire. Patented December 10, 1918. Term 14 years. C. L. Anderson, assignor to The Goodyear Tire & Rubber Co., both of Akron, O.
- 120,750. Pneumatic tire. Patented December 31, 1918. Term 14 years. H. H. Hazeltine, Tacoma, Wash.

The London View of the 1918 Market.

THE YEAR 1918 witnessed a complete upset of the normal development of crude rubber supply and demand. The trade had not foreseen how America's part in the war would restrict imports and curtail consumption of crude rubber, and especially that it would so drastically reduce the production of automobiles and pneumatic tires; but, notwithstanding the effort to curtail all plantation production correspondingly, the world's available stocks to-day are greater than ever before. Although the demands for war purposes were large, America probably used no more than two-thirds of the 1917 consumption, being helped by the large stocks there and afloat. The absence of the Russian demand added to the reduced consumption, and Germany and Austria can have had little to use.

The total visible supply of crude rubber on December 31 was estimated at about 87,000 tons, 7,000 tons afloat and 80,000 tons in British, American, East Russian and Middle Eastern stocks, or about 56,500 tons more than at the end of 1917. British stocks on December 31 totaled 19,000 tons, of which about 18,000 tons were plantation sorts. British imports and deliveries of all sorts for the year were only 42,800 and 39,461 tons, respectively, against 67,036 and 64,668 tons in 1917. Of these amounts 37,456 and 34,800 tons, respectively, were other than Pará and Peruvian.

With all American restrictions on the manufacture of motor vehicles and tires now removed; with the passenger-car market returning to normal, and the demand for trucks and solid tires greater than ever; with a world shortage of rubber goods of every sort; with the shipping situation constantly improving, the prospect for 1919 is much brighter. Pre-war conditions will gradually be reestablished, and this is believed to apply to the packing of rubber as well as many other matters.

The close press packing of plantation rubber to make a case contain greater weight, introduced partially in the late autumn, does not suit the European market and is liable to cause deterioration of the rubber. Bales are also objected to. Strong, planed wood cases of 1½-hundredweight size are preferred, especially for sheets, which should be carefully packed laid flat, not folded.

THE MARKET.

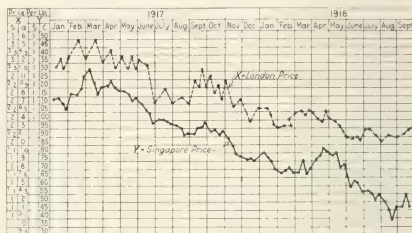
At the beginning of the year plantation rubbers were very close to their highest levels. In January standard crêpe ranged from 2s. 3d. to 2s. 6¼d. and smoked sheet from 2s. 2½d. to 2s. 5¼d. In March crêpe brought as high as 2s. 6½d. and sheet 2s. 5¾d. Thereafter occurred a gradual decline with minor fluctuations until in August standard crêpe dropped as low as 2s. 1d. and smoked sheet as low as 2s. An upward tendency then developed and continued until November, when crêpe sold as high as 2s. 6d. and sheet as high as 2s. 5d. December quotations, however, ranged from 2s. 2½d. to 2s. 4d. for standard crêpe, and from 2s. 1½d. to 2s. 3¾d. for smoked sheet in response to the easing of shipping conditions following the signing of the armistice and the knowledge of accumulating stocks at Eastern shipping points.

February and March afforded opportunities to make sales at good prices, as unwise speculators forced prices up at one time to 2s. 8½d. forward, resulting in many losses to buyers. But estates took little advantage of making considerable sales forward. Although shipping facilities were uncertain, undue nervousness was shown in making forward sales, and good orders in the spring for forward delivery in the East and London were not executed, or only to a very limited degree.

In June came unforeseen the decision of America to reduce its importation and consumption of rubber by one-half. The effect of this was greatly increased by the fact that planters had sold such a small part of the 1918 crop for forward delivery. Prices were forced down; a glut of rubber in the East, despite

the efforts of the Rubber Growers' Association to stabilize the market by curtailment of production, aided the depression, and large sales at ridiculously low prices were made in the East—as low as 10½d. ex go-down for rubber now worth 1s. 9½d.

London brokers, well versed in the entire trade, believe this panic could have been averted had they been employed with confidence by the trade. They regard it as another proof that more concentration of trade through London channels of selling will secure a higher return to planters, is to the great advantage of estates, and will be more so. Such a large and growing trade,



(Malayan Tin & Rubber Journal.)

CRUDE RUBBER TOP PRICES IN LONDON AND SINGAPORE FROM JANUARY, 1917, TO SEPTEMBER, 1918.

they assert, must be conducted by larger sales of the succeeding year's crop; moreover, greater readiness to sell when there are eager buyers will result to the benefit of planters by giving large, long-established dealers a greater interest. Now that the war is over they point out that rubber can be readily distributed from England to all parts of the world and that larger London stocks need cause no alarm, either on the score of dock space, finance, or fear of deterioration of the rubber held in large stocks. It is commonly said that "the absurd restriction of exports" from England must cease.

Prices of Pará rubber have been well sustained and have shown a considerable premium over plantations. However, the large daily supply of the latter from the Middle East, sold forward or on arrival has naturally affected the demand for all Brazilian grades. Imports of medium descriptions have generally fallen off. For certain grades a fair demand has prevailed, but inferior, soft, weak rubbers have sold with difficulty at low prices. The demand for caucho ball has greatly declined and the price is much lower.

In January hard fine Pará ranged from 2s. 7¾d. to 2s. 9¼d. and in February sold as low as 2s. 6¼d. Then occurred a gradual rise until in September it ranged from 3s. 2½d. to 3s. 8d. followed by a decline until in December it ranged from 2s. 7d. to 2s. 9½d.

The following closing prices for recent years are of interest:

	Hard Fine Pará	Negrohead Scrappy.	Negrohead Island.	Caucho Ball.
1914.....	2s. 10¼d.	2s. 1½d.	1s. 3d.	2s. 4d.
1915.....	3s. 9d.	2s. 10d.	1s. 7½d.	3s.
1916.....	3s. 3d.	1s. 11d.	1s. 3d.	2s. 2d.
1917.....	3s. 8½d.	1s. 5d.	1s.	1s. 6½d.
1918.....	2s. 7d.	1s. 7d.	1s.	1s. 8d.

Balata was in less supply and good demand throughout the year, closing at 4s. ¼d. for sheet and 3s. 6½d. for block. Good qualities of gutta percha realized high prices and at one time jelutong prices were more than doubled, present quotations being about £40 c. i. f.

THE WORLD'S PRODUCTION.

The world's production of crude rubber of all grades for the year 1918 is estimated by authorities at about 257,000 tons. The amount would have been much greater but for curtailed production made necessary by the continued diversion of ship tonnage from normal business to war transport. The following table shows the total production of crude rubber for the last three years:

	1918.	1917.	1916.
Ceylon and India.....	4,000	25,000	24,500
Malaya, Dutch East India, etc.....	190,600	165,000	105,500
Amazonas (Brazil, Bolivia).....	26,000	31,771	28,255
Peruvian and Caucho.....	8,400	9,729	8,245
West Coast, Africa.....	3,000	3,000	2,000
Bencuela and Mossamedes.....	3,000	3,000	2,000
Loanda.....	3,200	3,500	5,000
Congo, French Congo and Soudan.....	2,600	2,500	4,500
From other sources.....	257,000	240,500 ²	178,000 ²

²Underestimated.

The production of South American rubber was considerably decreased. Bolivia sent less; Mollendo and Venezuela via the Orinoco, none; Ceara, Maniçoba, Pernambuco, Assare, Manga-beira, very little; Mattogrosso, much less. Central America, including Nicaragua, Colombia and Ecuador, exported very little rubber: Mexico almost nothing, other than guayule rubber. Decreased amounts have been received from the West Coast of Africa especially Congo and Soudan, but good quantities sold well from the Niger, Gold Coast, Accra, etc., Cameroons, Sierra Leone, Gaboon, Conakry, French Congo and Soudan. Exports of lump have been much less. Very little rubber came from East Africa, Madagascar and Abyssinia. British and former German East Africa sent very little *Manihot* rubber; Zanzibar, scarcely any red rubber; Nyassaland and New Guinea, none. Penang reduced its supply of wild rubber, also Rangoon and Assam. Java, Sumatra and Borneo exported much less Ram-bong rubber but more *Hevea*. Amounts coming from Toulain and Cochín China were very small.

The following table shows the annual receipts and shipments at Pará for the last three years:

	1918.	1917.	1916.
Receipts of Pará.....	23,000	28,759	28,260
Receipts of Peruvian.....	8,000	7,000	7,000
Shipments of Pará and Peruvian to Europe.....	6,035	14,320	12,045
Shipments of Pará and Peruvian to America.....	19,550	25,950	22,185

PLANTATION RUBBER.

Owing to increased production capacity of plantations and curtailed consumption of crude rubber resulting from the war, also because of labor shortages and the high cost of estate operations, less than 100,000 planted acres were added to the total during 1918. All of the principal plantation rubber countries of the Middle East have made some progress, with the exception of the former German colonies, where, largely through neglect, the effective acreage has decreased to two-thirds of what it was in 1916.

Plantations, chiefly of *Castilloa*, in Mexico, West Indies and Central and South America have shown no progress and the yields have been insignificant. The same is true of Ceara plantations in East Africa. Plantations in India, Burma and the Mergui are being extended.

The approximate plantation acreages for three years past follow:

	1918.	1917.	1916.
Ceylon.....	300,000	260,000	230,000
Malaya.....	800,000	750,000	600,000
Borneo.....	50,000	40,000	30,000
Dutch East Indies, Java, Sumatra, etc.....	700,000	650,000	500,000
India and Burma.....	55,000	50,000	40,000
Former German colonies, Samoa, East and West Africa.....	8,000	10,000	12,000
Totals.....	1,913,000	1,820,000	1,412,000

DISTRIBUTION.

The consumption of crude rubber of the various grades, exclusive of large quantities of reclaimed rubber, has been estimated as follows:

	1918.	1917.	1916.
England.....	24,000	26,000	25,000
Germany, Austria, etc.....	1,000	1,000	1,000
France.....	14,000	10,000	5,500
Russia.....	2,000	7,000	20,000
Italy, Spain, Scandinavia, etc.....	5,000	5,500	4,000
Japan and Australia.....	5,000	5,000	5,000
America and Canada.....	187,000	155,000	114,000
Totals.....	238,000	210,000 ²	178,000 ²

²Underestimated.

Abnormal war-time influences have in many instances upset former distribution tendencies. Conservation of ship tonnage for war purposes reduced rubber consumption in England considerably and in Italy a little, while the rationing of neutrals by the Allies to prevent assistance to the enemy curtailed imports by Spain and the Scandinavian countries somewhat. The Central Powers found no way to increase their supply, and the Japanese and Australian demand has remained very nearly stationary. Continued chaotic conditions in Russia have reduced the consumption of rubber to one-tenth what it was in 1916. The big increases of the year have been in France and the United States; in the former almost entirely for war material, but in the latter partly because of wider use of rubber goods, especially pneumatic tires, by the entire population.

NOTE.—Much of the information contained in the above review was supplied by S. Figgis & Co., London.

RUBBER EXPORTS FROM THE STRAITS SETTLEMENTS AND FEDERATED MALAY STATES.

Statistics of the exports of rubber from the Federated Malay States and the Straits Settlements are now available to the general public. The official figures given below show that there was a falling off in the exports for the past year when compared with 1917, due, of course, to the lack of transport and the restrictions imposed upon imports by the United States government. Many of the rubber companies in Malaya adopted a policy of voluntary restriction of tapping; but there was at the end of the year a considerable amount of rubber stored at Singapore which will come into the present year's statistics when freer shipping facilities permit of its movement.

Appended are the exports for three years from the Federated Malay States.

	1916.	1917.	1918.
January.....	4,471	5,995	7,588
February.....	5,207	7,250	6,820
March.....	4,429	7,058	7,709
April.....	3,914	5,955	7,428
May.....	4,956	7,179	5,881
June.....	6,009	5,114	6,161
July.....	5,053	5,798	5,706
August.....	5,782	6,487	5,291
September.....	6,376	7,087	6,588
October.....	5,968	7,079	5,901
November.....	6,776	6,180	7,097
December.....	5,718	7,724	7,085
Totals.....	62,764	79,831	78,225

The corresponding statistics for the Straits Settlements are given below; the transshipments for 1917 and 1918, amounting to 7,416 tons and 4,447 tons respectively, are included in the totals:

	1916.	1917.	1918.
January.....	4,443	3,562	4,302
February.....	3,359	6,495	2,434
March.....	4,481	8,299	8,858
April.....	5,103	6,103	6,584
May.....	6,274	6,282	13,587
June.....	3,836	8,775	6,515
July.....	5,106	7,551	1,978
August.....	3,246	7,286	1,240
September.....	2,987	5,679	6,209
October.....	5,233	4,702	3,260
November.....	5,547	5,555	2,661
December.....	3,219	6,503	4,839
Totals.....	48,650	73,092	61,376

PLANTATION RUBBER EXPORTS FROM JAVA.

	Ten Months Ended October 31.			
	1917.	1918.	1917.	1918.
To Holland.....	1,170,000	1,277,000	1,292,000	1,659,000
England.....	101,000	121,000	1,371,000	4,781,000
United States.....	1,170,000	1,277,000	1,318,000	6,718,000
Singapore.....	226,000	231,000	25,000	17,000
Other countries.....	5,000	296,000	25,000	1,010,000
Totals.....	1,503,000	656,000	15,906,000	14,868,000
From Batavia.....	940,000	332,000	9,284,000	7,839,000
Samarang.....	4,000	5,000	192,000	110,000
Soerabaya.....	557,000	319,000	6,191,000	6,668,000
Other ports.....	1,000	1,000	239,000	231,000
Totals.....	1,503,000	656,000	15,906,000	14,868,000

Review of the Crude Rubber Market.

NEW YORK.

EARLY in February when large orders were placed by manufacturers, it seemed that the long-anticipated buying movement had actually commenced. The demand for plantation rubber, to arrive, was active, and spot stocks were quickly absorbed. As prices advanced, the activity subsided, however, indicating that manufacturers' requirements had been supplied, at least for the time being.

The reaction that followed resulted in lower prices that attracted a comparatively small volume of factory orders, and a limited amount of dealers' business was done. Quiet and easy conditions prevailed until later in the month when an active dealers' demand for near-by plantation rubber to cover short sales, gave strength to the market and prices advanced.

Generally speaking, the market for the month has been a favorable one for buyers whose requirements were not large, but with increasing arrivals of the crude material, conditions will undoubtedly continue to favor the manufacturers.

PLANTATIONS.—February 4, spot latex crépe was 58 cents; March arrival 56 cents and May-June arrival 52 cents. February 20 spot latex was 56 cents; March arrival 56 cents and May-June arrival 52 cents.

Spot ribs were 57½ cents on February 4; March arrival 55 cents and May-June arrivals, 50 cents. On February 20, spot ribs were 55 cents; March arrival 53½ cents; May arrival 51½ cents and June-December, 50½ cents.

February 4, No. 1 amber crépe was quoted March-April (East) 47½ cents. On February 20 the price of this grade was unchanged.

No. 1 roll brown crépe, spot, sold for 39½ cents, on February 4, and declined to 37½ cents on February 20.

PARAS.—February 4, upriver fine, spot, was 58 cents; islands fine, March-April, 48 cents; upriver coarse, spot, 34½ cents; upriver caucho ball, spot, 34 cents; cameté, coarse, April-May, 22½ cents.

February 20, upriver fine, spot, was 58½ cents and cameté, coarse, April-May, 22½ cents.

NEW YORK QUOTATIONS.

Following are the New York spot quotations, one year ago, one month ago and on February 24, the current date:

PLANTATION HEVEA—	Mar. 1, 1918.	Feb. 1, 1919.	Feb. 24, 1919.
First latex crépe.....	55½ @	56 @	56½ @
*Hevea first crépe.....			
Amber crépe No. 1.....	48 @	53 @	50 @
Amber crépe No. 2.....	46 @	52 @	49 @
Amber crépe No. 3.....	43 @	51 @	48 @
Amber crépe No. 4.....	42 @	50 @	46 @
Brown crépe, thick clean	45 @	50 @	47 @
Brown crépe, thin clean	43 @	50 @	47 @
Brown crépe, thin specky	43 @	44 @	45 @
Brown crépe, rolled.....	41 @	37 @	37 @
Smoked sheet, ribbed			
standard quality.....	57 @	54 @	53½ @
*Hevea ribbed/smoked			
sheets.....			
Smoked sheet, plain			
standard quality.....	55 @	53 @	54 @
*Hevea plain or			
smooth smoked sheets			
Unsmoked sheet,			
standard quality.....	55 @	52 @	51 @
*Hevea unsmoked			
sheets.....			
Colombo scrap No. 1.....	48 @	40 @	39 @
Colombo scrap, No. 2.....	45 @	38 @	37 @

BRAZILIAN PARAS—

Upriver fine.....	57 @	58½ @	58½ @
Upriver medium.....	51 @	53 @	53 @
Upriver coarse.....	46 @	54 @	54 @
Upriver weak fine.....	45 @	45 @	45 @
Upper caucho ball.....	33 @	33 @	34½ @

BRAZILIAN PARAS—

	Mar. 1, 1918.	Feb. 1, 1919.	Feb. 24, 1919.
Islands fine.....	47 @	49 @	49 @
Islands medium.....	47 @	43 @	44 @
Islands coarse.....	44 @	43 @	21½ @
Cameté, coarse.....	44 @	43 @	41 @
Lower caucho ball.....	34 @	34 @	34 @
Pernambuco fine.....	53 @	55 @	55 @
Lapaçu fine.....	52 @	55 @	55 @
AFRICANS—			
Niger flake, prime.....	48 @	48 @	24 @
Islands.....	47 @	48 @	24 @
Benguela, extra No. 1	30 @	22 @	33 @
1, 28% No. 1.....	30 @	30 @	33 @
Benguela, No. 2, 32½% No. 1	30 @	30 @	33 @
Congo prime, black	48 @	46 @	45 @
upper.....	48 @	46 @	45 @
Congo prime, red upper	45 @	46 @	46 @
Rio Nunez ball.....	48 @	46 @	45 @
Rio Nunez sheets and	60 @	55 @	55 @
strings.....	60 @	55 @	55 @
Conakry nuggets.....	60 @	55 @	55 @
Massai sheets and strings	60 @	55 @	55 @

CENTRALS—

Corinto scrap.....	35 @	37 @	36 @
Esmeraldas sausage	35 @	37 @	36 @
Central scrap and d	35 @	37 @	36 @
strip, 75 per cent.....	35 @	37 @	36 @
Central wet sheet, 25%	26 @	24 @	24 @
Guayaquil, 60% guarantee	35 @	35 @	33 @
Guayaquil, dry.....	40 @	40 @	46 @

MANICOBAS—

Ceara negro heads.....	33 @	40 @	40 @
Ceara, clean.....	33 @	40 @	40 @
Manicoba (basis 30% loss washing and drying).....	37 @	40 @	41 @
Mangrove thin sheet.....	38 @	38 @	37 @

EAST INDIAN—

Assam crépe.....	37 @	38 @	38 @
Assam onion.....	36 @	37 @	38 @
Penang block scrap.....	34 @	37 @	38 @

BALATA—

Block, Ciudad Bolivar.	73 @	75 @	71 @
Colombia.....	57 @	63 @	60 @
Panama.....	54 @	55 @	56 @
Surinam sheet.....	88 @	90 @	88 @
Surinam, amber.....	97 @	92 @	90 @

PONTIANAK—

Banjerassin.....	13 @	14 @	13½ @
Palembang.....	16 @	16 @	16 @
Pressed block.....	21 @	21 @	19 @
Sarawak.....	21 @	21 @	21 @

GUTTA PERCHA—

Gutta Sialk.....	20 @	20 @	20 @
Red Mataasir.....	20 @	20 @	20 @

*Rubber Association of America nomenclature.
 **Nominal.

RECLAIMED RUBBER.

The conditions that prevailed in the reclaimed rubber market during February were noticeably better than last month owing to more frequent inquiries from the manufacturers. While the activities recorded in the market for crude rubber have not affected reclaims to any great extent, there is reason to believe that the anticipated demand for reclaimed rubber should materialize before many weeks. Prices have remained the same with the exception of shoe and tire stocks that are from one-quarter to one-half cent lower than last month.

NEW YORK QUOTATIONS.

FEBRUARY 24, 1919

Subject to change without notice.

Standard reclaims:		
Floating.....	35 @	40 @
Mechanical.....	35 @	40 @
Red.....	20 @	25 @
Shoe.....	14½ @	13½ @
Tire, auto.....	17½ @	17½ @
Tire, truck.....	12½ @	13½ @
White.....	24 @	25 @

COMPARATIVE HIGH AND LOW SPOT RUBBER PRICES.

	February.	
PLANTATIONS:	1919.	1918.
First latex cripe.....	\$0.58 @ 0.56	\$0.53 @ 0.51 1/2
Sheet, sheet rubber.....	57 1/2 @ 54	52 @ 49 1/2
PARAS:		
Upriver fine.....	59 1/2 @ 58 1/2	58 1/2 @ 56
Upriver coarse.....	55 @ 54	55 1/2 @ 53
Islands, fine.....	49 1/2 @ 48	48 @ 47
Islands, coarse.....	42 1/2 @ 41	35 @ 34
Cameta.....	25 @ 24	35 @ 34

¹Figured only to February 24.

WEEKLY RUBBER REPORT.

GUTHRIE & CO., LIMITED, Singapore, report [January 6, 1919]: Following advices of declining prices in the London and American markets, the rubber auction opened on January 2, with a rather weak tone, and although values show a slight improvement, they are generally below the level of business done prior to the auction. On the first day of the sale ribbed smoked sheet sold up to 76 cents and fine pale crepe, for which there was less demand than usual, reached 77 1/2 cents. An advance of 2 1/2 cents on sheet and 1/2 cent on crepe. These prices were barely maintained as the sale proceeded and the auction closed at 76 1/2 cents for sheet and 77 cents for crepe. Brown and black crepe were good demanded at prices 2 to 4 cents up. Small quantities of plain smoked and unsmoked sheet were sold.

The sale occupied the greater part of three days and 922 tons changed hands out of 1,883 tons catalogued.

The following was the course of values:

	In Singapore per Pound ¹	Sterling Equivalent per Pounds in London.
Sheet, fine ribbed smoked.....	74 @ 72 1/2	2/ 17 1/2 @ 2/ 3 1/4
Sheet, good ribbed smoked.....	72 1/2 @ 71 1/2	1/11 @ 2/ 1 1/4
Sheet, plain smoked.....	60 @ 71	1/10 @ 2/ 1
Sheet, ribbed unsmoked.....	59 1/2 @ 60 1/2	1/ 9 1/4 @ 1/10 1/4
Sheet, plain unsmoked.....	50 @ 56	1/ 7 1/2 @ 1/ 8 1/2
Crepe, fine pale.....	74 @ 72 1/2	2/ 17 1/2 @ 2/ 3 1/4
Crepe, good pale.....	66 @ 74	1/11 1/2 @ 2/ 1 1/4
Crepe, fine brown.....	58 @ 68	1/ 9 1/2 @ 2/ 0 1/2
Crepe, good brown.....	43 @ 57 1/2	1/ 5 1/2 @ 1/ 9 1/2
Crepe, dark.....	34 @ 46	1/ 3 1/2 @ 1/ 6
Crepe, dark and pressed.....	26 @ 38 1/2	1/ 6 1/2 @ 1/ 10 1/2
Scrap, virgin and pressed.....	27 @ 37	1/ 7 @ 1/ 10 1/2
Scrap, loose.....	20 1/2 @ 29	1/10 1/4 @ 1/ 1 1/4

¹Quoted in S. S. Currency.

THE MARKET FOR COMMERCIAL PAPER.

In regard to the financial situation, Albert B. Beers, broker in crude rubber and commercial paper, No. 68 William street, New York, advises as follows:

During February the demand for commercial paper has been rather erratic and mostly from out-of-town banks, the best rubber names going at 3 1/2 to 5 1/4 per cent, and those not so well known at 6 to 6 1/2 per cent.

CRUDE RUBBER ARRIVALS AT THE PORT OF NEW YORK.

The following statistics are not complete, due to government orders prohibiting access to the records.

[The Figures Indicate Weight in Pounds.]

	Fine.	Medium.	Coarse.	Caucho.	Cameta.	Totals.
JANUARY 27. By the <i>Elorence Phillips</i> , from Para.....						
H. A. Astlett & Co.....	109,800	33,500	19,000	125,000	36,000	533,500
FEBRUARY 1. By the <i>Tapioca</i> , from Manaos.....						
Aldens' Successors, Limited.....	127,802	33,737		6,378		167,917
FEBRUARY 1. By the <i>Poconoe</i> , from Manaos.....						
Aldens' Successors, Limited.....				19,027		19,627
FEBRUARY 1. By the <i>Hansa Pooling</i> , from Para.....						
H. A. Astlett & Co.....	32,500	69,000	27,000			128,500
FEBRUARY 1. By the <i>Farjies</i> , from Para.....						
General Rubber Co.....	44,800	22,400	23,400			44,800
H. A. Astlett & Co.....	164,000	51,600	50,900			366,500
Meyer & Brown.....	233,000		67,200			300,200
Poel & Kelly.....	116,879	14,024	101,855	26,263	7,975	266,296
FEBRUARY 1. By the <i>Poconoe</i> , from Para.....						
General Rubber Co.....	44,800					44,800
General Rubber Co.....	163,000	49,000	7,000	24,000	6,000	271,000
Poel & Kelly.....	222,074	37,123	60,467	10,659		330,223
Meyer & Brown.....			44,800	22,400		67,200
FEBRUARY 18. By the <i>Humala</i> , from Para.....						
General Rubber Co.....	10,364					10,364
Meyer & Brown.....	76,200					76,200
H. A. Astlett & Co.....	160,000	45,000	7,000			212,000

¹Includes medium also.

ARRIVALS AT THE PORT OF NEW YORK.

	Pounds.
JANUARY 24. By the <i>Nagano Maru</i> , from Colombo.....	153,000
Poel & Kelly.....	561,920
JANUARY 28. By the <i>Krasnoyarsk</i> , from Colombo.....	100,000
FEBRUARY 1. By the <i>Iranjooli Hall</i> , from Colombo.....	172,000
Poel & Kelly.....	22,400
Fred Stern & Co.....	224,000
L. Littlejohn & Co., Inc.....	418,400
FEBRUARY 10. By the <i>Kathlamia</i> , from Colombo.....	216,680
General Rubber Co.....	290,000
Poel & Kelly.....	1,739,360
L. Littlejohn & Co., Inc.....	1,220,680

AFRICANS.

FEBRUARY 10. By the <i>Cambodia</i> , from Liverpool.....	30,800
Poel & Kelly.....	

GUAYULE.

FEBRUARY 7. By rail, from Eagle Pass, Texas.....	51,000
Continental-Mexican Rubber Co.....	

CRUDE RUBBER ARRIVALS AT PACIFIC COAST AS REPORTED.

	Pounds.
JANUARY 21. By the <i>General</i> , from Singapore.....	122,000
General Rubber Co.....	
JANUARY 23. By the <i>Shimpo Maru</i> , from Singapore.....	682,000
Meyer & Brown.....	257,600
Poel & Kelly.....	45,000
Fred Stern & Co.....	44,000
Rubber Trading Co.....	89,600
JANUARY 31. By the <i>Kamo Maru</i> , from Singapore.....	280,000
Meyer & Brown.....	2,197,440
General Rubber Co.....	520,000
Fred Stern & Co.....	151,200
Rubber Trading Co.....	8,960
JANUARY 1. By the <i>Humala</i> , from Singapore.....	112,000
The United Malaysian Rubber Co., Limited.....	

	Pounds.
FEBRUARY 10. By the <i>Arabia Maru</i> , from Singapore.....	156,800
General Rubber Co.....	112,000
Fred Stern & Co.....	404,200
FEBRUARY 11. By the <i>Senator</i> , from Singapore.....	1,429,120
General Rubber Co.....	940,800
Meyer & Brown.....	2,369,920
FEBRUARY 12. By the <i>Koon Maru</i> , from Singapore.....	1,120,000
General Rubber Co.....	212,800
Poel & Kelly.....	385,280
Fred Stern & Co.....	224,000
Rubber Trading Co.....	152,320
FEBRUARY 12. By the <i>Humala</i> , from Singapore.....	134,400
Meyer & Brown.....	197,200
Fred Stern & Co.....	94,800
Rubber Trading Co.....	22,400
The United Malaysian Rubber Co., Limited.....	447,900
FEBRUARY 18. By the <i>Easterling</i> , from Singapore.....	165,340
J. T. Johnstone & Co.....	
FEBRUARY 18. By the <i>Shinkoku Maru</i> , from Straits Settlements.....	61,500
J. T. Johnstone & Co.....	

AT VANCOUVER.

JANUARY 25. By the <i>Kamo Maru</i> , from Singapore.....	280,000
Meyer & Brown.....	
JANUARY 25. By the <i>Humala</i> , from Singapore.....	134,400
Meyer & Brown.....	89,600
FEBRUARY 6. By the <i>Kashima Maru</i> , from Singapore.....	624,960
General Rubber Co.....	
FEBRUARY 12. By the <i>Shimpo Maru</i> , from Singapore.....	2,197,440
General Rubber Co.....	520,000
Fred Stern & Co.....	151,200
Rubber Trading Co.....	8,960

PONTIANAK.

FEBRUARY 1. By the <i>Humala</i> , from Singapore.....	112,000
The United Malaysian Rubber Co., Limited.....	

	Pounds.
FEBRUARY 17. By the <i>Key West</i> , from Singapore.....	204,160
The United Malaysian Rubber Co., Limited.....	

GUTTA PERCHA.

FEBRUARY 11. By the <i>Venator</i> , from Singapore.....	168,000
The United Malaysian Rubber Co., Limited.....	
FEBRUARY 12. By the <i>Humala</i> , from Singapore.....	134,400
The United Malaysian Rubber Co., Limited.....	
FEBRUARY 12. By the <i>Key West</i> , from Singapore.....	204,160
The United Malaysian Rubber Co., Limited.....	
FEBRUARY 12. By the <i>Key West</i> , from Singapore.....	204,160
The United Malaysian Rubber Co., Limited.....	

¹Arrived at Tacoma.

²Arrived at Vancouver.

³Arrived at Seattle.

CRUDE RUBBER ARRIVALS AT PACIFIC COAST AS STATED BY SHIP'S MANIFESTS.

SEATTLE AND TACOMA. PLANTATIONS.

JANUARY 24. By the <i>Shimpo Maru</i> from Kobe, via Seattle.....	431,640
The Goodyear Tire & Rubber Co.....	
JANUARY 24. By the <i>Shimpo Maru</i> from Kobe, via Seattle.....	431,640
The Goodyear Tire & Rubber Co.....	
JANUARY 24. By the <i>Shimpo Maru</i> from Kobe, via Seattle.....	431,640
The Goodyear Tire & Rubber Co.....	
JANUARY 24. By the <i>Shimpo Maru</i> from Kobe, via Seattle.....	431,640
The Goodyear Tire & Rubber Co.....	

TO BOSTON, MASS.

FEBRUARY 1. By the *Shimpo Maru* from Kobe, via Seattle.....

TO AKRON, OHIO.

JANUARY 24. By the *Shimpo Maru* from Kobe, via Seattle.....

TO BOSTON, MASS.

FEBRUARY 1. By the *Shimpo Maru* from Kobe, via Seattle.....

TO NEW YORK.

FROM THE SHIP.		POUNDS.
JANUARY 24. By the <i>Shampo</i> , from Kobe, via Seattle:		
Alfens' Successors, Limited	4,474	
Meyer & Brown	284,941	
Edward Maurer Co., Inc.	55,800	
Fred Stern & Co.	9,000	
Paul & Kelly	284,941	
Robinson & Co.	99,360	
William H. Stiles & Co.	121,880	
W. R. Grace & Co.	10,080	
L. Littlejohn & Co.	107,100	1,069,380
Rubber Trading Co.	83,340	
JANUARY 30. By the <i>Shampo</i> , from Port Swettenham, via Kobe:		
Alfens' Successors, Limited	134,820	
Robinson & Co.	9,000	143,820
JANUARY 30. By the <i>Taiyo</i> , from Penang, via Singapore:		
F. R. Henderson & Co.	18,360	
JANUARY 30. By the <i>Taiyo</i> , from Port Swettenham, via Hongkong:		
Meyer & Brown	130,140	
F. R. Henderson & Co.	320,400	
Alfens' Successors, Limited	39,060	
Edward Maurer Co., Inc.	205,200	
Paul & Kelly	27,900	
Charles T. Wilson Co., Inc.	92,230	
Robinson & Co.	89,640	
Hadden & Co.	63,380	1,011,240
JANUARY 30. By the <i>Taiyo</i> , from Singapore, via Hongkong:		
Rubber Importers & Dealers Co., Inc.	561,000	
Paul & Kelly	31,860	
Hadden & Co.	81,360	674,220
FEBRUARY 12. By the <i>Himalaya</i> , from Port Swettenham, via Yokohama:		
William H. Stiles	11,520	
FEBRUARY 12. By the <i>Himalaya</i> , from Port Swettenham, via Yokohama:		
Alfens' Successors, Limited	37,260	
FEBRUARY 12. By the <i>Himalaya</i> , from Teluk Anson, via Yokohama:		
Alfens' Successors, Limited	7,200	
FEBRUARY 12. By the <i>Himalaya</i> , from Singapore, via Yokohama:		
Charles T. Wilson Co., Inc.	199,620	
Alfens' Successors, Limited	4,440	
Meyer & Brown	128,340	
Rubber Trading Co.	86,380	
L. Littlejohn & Co.	161,980	
William H. Stiles	20,200	
Robinson & Co.	4,800	521,960
FEBRUARY 12. By the <i>Kanai</i> , from Singapore, via Hongkong:		
Charles T. Wilson Co., Inc.	475,560	
Meyer & Brown	188,300	
Edward Maurer & Co.	40,440	
Rubber Trading Co.	136,620	
General Rubber Co.	876,600	
Paul & Kelly	238,300	
Robinson & Co.	124,400	
William H. Stiles	20,160	
Beck and Sullen Co.	72,120	
Hadden & Co.	221,220	
Avery McPhillips	159,300	
Rubber Importing & Dealers Co., Inc.	77,740	2,929,140

TO SAN FRANCISCO, CALIF.

JANUARY 24. By the <i>Shampo</i> , from Penang, via Kobe	
Robinson & Co.	3,960

TO SEATTLE, WASH.

JANUARY 24. By the <i>Shampo</i> , from Kobe:	
Alfens' Successors, Limited	4,474
L. Littlejohn & Co.	500,400
Mitsui & Co., Limited	83,340
Paul & Kelly	1,840
JANUARY 24. By the <i>Shampo</i> , from Penang, via Kobe:	
Alfens' Successors, Limited	91,620
Fred Stern & Co.	118,620
JANUARY 30. By the <i>Taiyo</i> , from Penang, via Hongkong:	
Alfens' Successors, Limited	9,000
F. R. Henderson & Co.	8,100
JANUARY 30. By the <i>Taiyo</i> , from Singapore, via Hongkong:	
L. Littlejohn & Co.	36,940
F. R. Henderson & Co.	27,000
Mitsui & Co., Limited	165,600
FEBRUARY 1. By the <i>Kashima</i> , from Singapore, via Yokohama:	
Edward Maurer Co., Inc.	46,620
FEBRUARY 8. By the <i>Arabia</i> , from Singapore, via Yokohama:	
Mitsui & Co.	297,900
Robinson & Co.	3,600
Fred Stern & Co.	288,360
Rubber Importers & Dealers Co., Inc.	78,300

FROM THE SHIP.		POUNDS.
FEBRUARY 11. By the <i>Shampo</i> , from Singapore, via Hongkong:		
General Rubber Co.	1,115,640	
Meyer & Brown	506,580	
General Tire & Rubber Co.	506,580	
L. Littlejohn & Co.	104,760	2,583,600
Paul & Kelly	1,115,640	
Penang via Yokohama:		
Alfens' Successors, Limited	36,540	
Rubber Trading Co.	5,580	42,120
FEBRUARY 12. By the <i>Himalaya</i> , from Singapore, via Yokohama:		
Mitsui & Co., Limited	202,860	
L. Littlejohn & Co.	121,140	
Fred Stern & Co.	171,720	
Malaysian Rubber Co.	20,160	515,880
FEBRUARY 12. By the <i>Kanai</i> , from Singapore, via Hongkong:		
L. Littlejohn & Co.	339,480	
Edward Maurer Co., Inc.	96,300	
Fred Stern & Co.	232,020	
Far East Importing Co.	123,300	
Robinson & Co.	1,800	
Alfens' Successors, Limited	3,600	
T. T. Johnstone & Co.	27,540	
Paul & Kelly	124,920	
Rauk Products Co.	61,200	
Rowhill & Victor	90,000	1,091,160

FROM THE SHIP.		POUNDS.
FEBRUARY 12. By the <i>Arabia</i> , from Singapore, via Yokohama:		
United States Rubber Co.	134,640	
Canadian Consolidated Rubber Co., Limited	111,960	
L. Littlejohn & Co.	761,400	
William H. Stiles	132,120	
Meyer & Brown	118,800	
F. R. Henderson & Co.	24,880	
Rubber Importers & Dealers Co., Inc.	163,140	
Robinson & Co.	61,020	1,587,780

TO WATERTOWN, MASS.

FEBRUARY 12. By the <i>Kanai</i> , from Singapore:	
Hood Rubber Co.	503,640

TO TORONTO, ONT.

JANUARY 24. By the <i>Shampo</i> , from Kobe, via Vancouver:	
Dunlop Tire & Rubber Goods Co., Limited	12,960

Discharged cargo at Tacoma.

SAN FRANCISCO.

FEBRUARY 5. By the <i>Sorcerer</i> , from Batavia:	
General Rubber Co.	201,420
Edward Maurer & Co.	301,680
The Goodyear Tire & Rubber Co.	1,260,900
C. Fox & Co.	50,760
Robinson & Co.	11,550

VANCOUVER.

TO AKRON, OHIO.

JANUARY 24. By the <i>Monteagle</i> , from Singapore, via Hongkong:	
The R. F. Goodrich Co.	863,100
JANUARY 25. By the <i>Kanai</i> , from Kobe, via Hongkong:	
T. T. Johnstone & Co.	44,820
The Goodyear Tire & Rubber Co.	719,100
FEBRUARY 6. By the <i>Kashima</i> , from Kobe, via Hongkong:	
The R. F. Goodrich Co.	69,120
FEBRUARY 6. By the <i>Kashima</i> , from Kobe, via Hongkong:	
The Goodyear Tire & Rubber Co.	298,800
FEBRUARY 15. By the <i>Key West</i> , from Singapore:	
The R. F. Goodrich Co.	1,440,700
Firestone Tire & Rubber Co.	84,060
The Goodyear Tire & Rubber Co.	2,491,200
Co.	4,015,960

TO DETROIT, MICH.

FEBRUARY 6. By the <i>Kashima</i> , from Singapore, via Hongkong:	
Morgan & Wright	617,220

TO NEW YORK.

JANUARY 22. By the <i>Monteagle</i> , from Penang, via Hongkong:	
Alfens' Successors, Limited	69,120
Robinson & Co.	94,640
JANUARY 25. By the <i>Kanai</i> , from Kobe, via Hongkong:	
Meyer & Brown	338,940
FEBRUARY 6. By the <i>Kashima</i> , from Singapore, via Hongkong:	
Hadden & Co.	117,860
FEBRUARY 15. By the <i>Key West</i> , from Penang, via Singapore:	
Alfens' Successors, Limited	12,240
Fred Stern & Co.	71,460
Rubber Trading Co.	7,200
W. R. Grace & Co.	11,880

FROM THE SHIP.		POUNDS.
FEBRUARY 15. By the <i>Key West</i> , from Singapore:		
United States Rubber Co.	1,927,800	
Charles T. Wilson Co., Inc.	172,620	
Robinson & Co.	97,160	
William H. Stiles	45,720	
Edward Maurer Co.	204,840	
Wm. McPhillips & Co.	144,000	
L. Littlejohn & Co.	438,400	
R. H. Harrison & Co.	106,380	
Paul & Kelly	439,900	3,568,400

653,440 pounds shortshipped.	
653,440 pounds shortshipped.	

JANUARY 22. By the *Monteagle*, from Penang, via Hongkong.

Robinson & Co.	1,980
via Singapore:	
Robinson & Co.	11,520
L. Littlejohn & Co.	47,160
Fred Stern & Co.	65,120
124,200	

FEBRUARY 15. By the *Key West*, from Singapore:

Alfens' Successors, Limited	18,000
T. T. Johnstone & Co.	103,650
Fred Stern & Co.	5,040
Paul & Kelly	61,200
L. Littlejohn & Co.	458,640
W. R. Grace & Co.	4,320
Hadden & Co.	89,460
Peninsular Trading Co.	44,640
784,980	

TO WATERTOWN, MASS.

FEBRUARY 15. By the <i>Key West</i> , from Singapore:	
Hood Rubber Co.	175,680

GUTTA SIAH.

TO NEW YORK.

FEBRUARY 8. By the <i>Arabia</i> , from Singapore, via Yokohama and Tacoma:	
United States Rubber Co., Limited	300
FEBRUARY 12. By the <i>Himalaya</i> , from Singapore, via Yokohama:	
United States Rubber Co., Limited	118,800

TO SEATTLE.

FEBRUARY 11. By the <i>Senator</i> , from Singapore, via Hongkong:	
United States Rubber Co.	179,100
FEBRUARY 12. By the <i>Kanai</i> , from Singapore:	
L. Littlejohn & Co.	162,900

JELUTONG.

TO NEW YORK.

FEBRUARY 8. By the <i>Arabia</i> , from Singapore, via Yokohama and Tacoma:	
Various	165,000
FEBRUARY 12. By the <i>Himalaya</i> , from Singapore, via Yokohama:	
United States Rubber Co., Limited	150,000

*Untreated.

TO SEATTLE.

JANUARY 30. By the <i>Taiyo</i> , from Singapore, via Hongkong:	
L. Littlejohn & Co.	90,000
FEBRUARY 11. By the <i>Senator</i> , from Singapore, via Hongkong:	
Bowling & Co.	300
FEBRUARY 12. By the <i>Kanai</i> , from Singapore:	
L. Littlejohn & Co.	236,500

GUTTA PERCHA.

TO SEATTLE.

JANUARY 30. By the <i>Taiyo</i> , from Singapore, via Hongkong:	
L. Littlejohn & Co.	11,100

*Treated.

RUBBER IMPORTS AND EXPORTS AT BOSTON.

PORT OF THE DISTRICT OF MASSACHUSETTS.		DECEMBER, 1918.
IMPORTS.		

UNMANUFACTURED	FOUNDS.	VALUE.
Crude rubber:		
From Straits Settlements	561,401	\$149,531
MANUFACTURED—		
Rubber goods:		
From England		1,169

EXPORTS OF DOMESTIC MERCHANDISE.

MANUFACTURED		FOUNDS.	VALUE.
Rubber boots—pairs	1,140	2,971	
Rubber shoes—pairs	3,570	3,374	
Druggists' rubber sundries		480	
Other manufactures		3,077	
Total			\$9,707

RUBBER IMPORTS AND EXPORTS AT NEW YORK.

IMPORTS.

	December, 1918.	
	POUNDS.	VALUE.
Crude rubber:		
From Canada	12,400	\$3,536
Costa Rica	2,350	1,213
Nicaragua	11,483	3,272
Panama	150	30
Mexico	10,000	35,308
Bolivia	474,781	207,793
Brazil	5,582,432	1,776,418
Colombia	32,398	14,482
Ecuador	1,400	209
Peru	152,000	49,390
Straits Settlements	743,653	289,867
Other British East Indies	118,287	51,572
Dutch East Indies	485,504	151,839
Philippine Islands	29,860	13,463
British West Africa	21,211	5,091
Totals	7,777,889	\$2,603,513
Balata:		
From Panama	9,310	\$3,748
Portugal	1,240	6,128
British Guiana	23,751	21,415
Dutch Guiana	13,436	9,803
Totals	38,737	\$40,094
Scrap rubber	684,299	\$63,706

EXPORTS OF DOMESTIC MERCHANDISE.

December, 1918.

	December, 1918.	
	POUNDS.	VALUE.
MANUFACTURED—		
Automobile tires:		
T. Belgium	\$28,718	
France	172,454	
Spain	30,723	
Sweden	18,845	
Costa Rica	2,318	
Honduras	1,758	
Nicaragua	408	
Panama	6,037	
Salvador	4,361	
Venezuela	24,621	
Barbados	4,103	
Lima	28,022	
Tromsund	3,045	
Other British West Indies	6,778	
India	71,358	
Danish West Indies	821	
Dutch West Indies	774	
French West Indies	20,700	
Haiti	3,231	
Santo Domingo	17,556	
Venezuela	5,951	
B. India	5,252	
Brazil	8,834	
Colombia	133,717	
Costa Rica	860	
Ecuador	3,631	
British Guiana	4,624	
Peru	58,859	
Venezuela	16,719	

	December, 1918.	
	POUNDS.	VALUE.
MANUFACTURED—		
British India	1,515	
Straits Settlements	1,499	
Dutch East Indies	9,493	
Hong Kong	1,488	
Australia	93,688	
British West Africa	14,408	
British South Africa	269	
French Africa	131	
Total	\$705,635	
All other tires	\$31,143	
Belting	237,224	
Rubber boots	19,127	
Rubber shoes	19,641	
Trunks, umbrellas	14,859	
Other rubber manufactures	372,295	
Total	\$771,608	
Reclaimed rubber	71,289	10,753

EXPORTS OF FOREIGN MERCHANDISE.

	December, 1918.	
	POUNDS.	VALUE.
MANUFACTURED—		
Balata		
To England	6,440	\$36,180
Gutta percha		
To England	180	72

OFFICIAL INDIA RUBBER STATISTICS FOR THE UNITED STATES.

IMPORTS OF CRUDE AND MANUFACTURED RUBBER.

	November.			
UNMANUFACTURED—	POUNDS.	VALUE.	POUNDS.	VALUE.
India rubber:				
From France	2,307	\$2,641	.....	.....
Portugal	34,823	20,900	.....	.....
United Kingdom	1,185,348	599,796	.....	.....
Canada	87,610	57,916	.....	367 1/2
Central America	64,401	24,780	.....	630
Mexico	71,979	24,930	444,545	160,301
Brazil	1,680,088	590,726	2,234,882	809,306
Colombia	174,393	81,810	.....	.....
Other South America	218,835	95,794	52,013	21,806
British East Indies	28,316,106	15,353,056	10,891,900	3,906,526
Dutch East Indies	3,190,475	1,681,688	396,968	146,026
Other countries	86,493	42,115	1,157,571	535,161
Totals	35,112,773	18,575,525	15,171,179	\$5,571,491
Balata	150,148	6,242	47,678	19,391
Guayule	805,612	238,304	.....	.....
Jelutong (Pontianak)	690,784	45,331	62,669	9,616
Gutta percha	22,560	3,086	.....	.....
Totals	1,669,104	\$349,963	110,347	\$28,007
Rubber scrap	1,865,262	126,708	543,021	33,643
Chicle	38,647,139	\$19,051,196	15,834,547	\$5,633,141
MANUFACTURED—				
India rubber and gutta percha	460,078	51,264	3,36,412	283,944
India rubber substitutes	.....	52,696	.....	20,395
	.....	1,360	11,200	4,623

EXPORTS OF DOMESTIC MERCHANDISE.

MANUFACTURED—				
Automobile tires		\$1,006,205		\$1,268,845
All other tires		174,085		57,868
Scrap and old		131,211	22,844	18,525
Reclaimed rubber		153,388	28,159	215,451
Belting, hose, and packing		695,519		399,812
Rubber boots		270,116	83,192	277,096
Rubber shoes		176,825	95,515	121,418
Druggists' rubber sundries			120,082	60,441
Insulated wire and cables			713,133	395,156
Other rubber manufactures			563,327	477,817
Totals, manufactured		\$4,340,861		\$3,092,738
Mountain pine	15,880		17,934	36,479

EXPORTS OF FOREIGN MERCHANDISE.

EXPORTS OF FOREIGN MERCHANDISE.				
UNMANUFACTURED—				
India rubber	291,579	\$148,560	119,750	\$59,361
Gutta percha	32,590	8,148	.....	.....
Totals, unmanufactured..	324,169	\$156,708	119,750	\$59,361

MANUFACTURED—			
India rubber	\$2,138		\$7,364
Gutta percha	3,252		
Totals, manufactured	\$5,390		\$7,364
Chicle		500	330

EXPORTS OF RUBBER GOODS TO NON-CONTIGUOUS TERRITORIES OF THE UNITED STATES.

MANUFACTURED—				
To Alaska:				
Belting, hose, and packing	.....	\$2,501	.....	\$4,437
Boots and shoes.....pairs	3,596	7,771	3,152	5,997
Other rubber goods.....		5,836		1,155
Totals	.....	\$16,108		\$11,589

November.

	1917.		1918.	
	POUNDS.	VALUE.	POUNDS.	VALUE.
MANUFACTURED—				
To Texas:				
Belting, hose, and packing.....		\$18,095		\$10,330
Automobile tires.....		162,359		120,464
Other tires.....		6,219		936
Other rubber goods.....		27,344		21,650
Totals.....		<u>\$214,017</u>		<u>\$153,380</u>
To Philippine Islands:				
Belting, hose, and packing.....		\$21,311		\$15,089
Boots and shoes.....pairs	4,518		28,012	25,111
Tires.....		77,205		31,295
Other rubber goods.....		10,025		24,878
Totals.....		<u>\$112,695</u>		<u>\$94,373</u>
To Porto Rico:				
Belting, hose, and packing.....		\$7,414		\$5,307
Automobile tires.....		102,368		53,571
Other tires.....		865		910
Other rubber goods.....		10,388		6,458
Totals.....		<u>\$121,036</u>		<u>\$68,246</u>

*Details of exports of domestic merchandise by countries during November, 1918, were given in THE INDIA RUBBER WORLD, February 1, 1919, page 278.

LONDON AND LIVERPOOL RUBBER STATISTICS.

The import and export figures by countries usually published in this table are withheld by the British Government.

IMPORTS.

	December.			
	1917.		1918.	
	Pounds.	Value.	Pounds.	Value.
UNMANUFACTURED—				
Crude rubber				
At London	1,477,700	£177,738	7,604,300	£767,445
Liverpool	4,763,000	618,918	4,538,300	531,936
Totals	6,240,700	£796,653	11,928,600	£1,294,281
Waste and reclaimed rubber:				
At London	3,400	40	500	12
Liverpool	104,700	992		
Totals	108,100	£1,032	500	£12

EXPORTS.

Waste and reclaimed rubber:				
From London	198,900	£3,088	284,000	£5,196
Liverpool	107,400	1,587	186,700	3,495
Totals	306,300	£4,675	470,700	£8,691

REEXPORTS.

		REVENUES			
Crude rubber:					
From London	.....	2,596,800	£320,857	1,080,400	£127,091
Liverpool	.....	650,800	89,917	785,500	95,638
Totals	.....	3,287,800	£410,774	1,865,900	£222,729
Waste and reclaimed rubber:					
From Liverpool	.....	27,500	£945		

EXPORTS OF INDIA RUBBER MANUFACTURES AND INSULATED WIRE AND CABLE FROM THE UNITED STATES DURING THE MONTH OF DECEMBER, 1918. (BY COUNTRIES.)

EXPORTED TO—	Tobacco Hemp and Packing Stuffs		Beeswax		Shoes		Rubber Sundries		Tires, For Auto- mobiles		Insulated Cables		All Other Manufactures		Total Value.
	Pairs.	Value.	Pairs.	Value.	Pairs.	Value.	Value.	Value.	Value.	Value.	Value.	Value.	Value.		
EUROPE:															
Belgium	.....	5,990	.....	\$32,705	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	\$61,423
France	700	12,600	.....	\$8,894	.....	.....	.....	.....	234	203,689	.....	11,017	117,982	.....	392,516
Germany	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1,126
Italy	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	36,466
Netherlands	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2,812
Portugal	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	116,003
Spain	.....	.....	.....	.....	3,656	1,812	.....	.....	.....	.....	.....	.....	.....	.....	18,852
Sweden	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	116,868
Switzerland	1,569	.....	3	11	.....	.....	.....	.....	.....	15,200	16,165	78,543	.....	.....	116,868
TOTALS, EUROPE	\$8,008	18,593	.....	\$91,610	3,978	.....	.....	\$6,753	\$274,227	\$15,291	\$129,309	\$222,558	.....	.....	\$449,000
AMERICA:															
NORTH AMERICA:															
Bermuda	\$85	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	\$1,104
British Honduras	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Canada	30,228	4,813	.....	\$15,392	17,823	17,860	.....	29,109	63,325	5,138	8,234	138,106	707,296	.....	846,565
Costa Rica	29	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Guatemala	214	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1,801
Honduras	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4,762
Nicaragua	1,937	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3,589
Panama	4,203	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	16,006
Salvador	491	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	9,397
Mexico	42,903	2	14	743	76	.....	.....	4,979	63,254	6,733	13,346	11,990	143,988	.....	190,998
Monterrey, Llaneta, etc.	.....	60	254	411	240	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Newfoundland and Labrador	4,449	1,740	5,049	6,147	5,473	.....	.....	.....	.....	.....	.....	.....	.....	.....	1,076
Barbados	376	.....	.....	1,082	1,285	163	4,103	.....	.....	.....	.....	.....	.....	.....	580
Jamaica	785	.....	.....	24	53	.....	.....	.....	.....	.....	.....	.....	.....	.....	1,164
Trinidad and Tobago	2,135	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1,965
Other British West Indies	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Cuba	28,764	48	118	7,419	4,846	2,917	98,393	.....	.....	.....	.....	.....	.....	.....	11,133
Danish West Indies	47	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	112
Dutch West Indies	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1,164
French West Indies	294	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2,901
Haiti	76	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	303
Dominican Republic	2,147	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1,750
TOTALS, NORTH AMERICA	\$121,464	6,663	.....	\$20,827	37,484	824,300	.....	\$40,825	\$344,491	\$18,164	\$60,290	\$123,085	\$852,406	.....	\$1,346,000
SOUTH AMERICA:															
Argentina	\$52,655	.....	.....	.....	2,641	1,708	.....	\$3,627	\$147,446	\$12,217	\$45,862	\$22,970	\$386,483	.....	.....
Bolivia	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Brazil	8,498	.....	.....	.....	42	62	.....	.....	.....	.....	.....	.....	.....	.....	37,611
Chile	70,753	.....	.....	.....	168	135	.....	1,271	133,717	4,073	87,075	39,803	138,407	.....	237,400
Colombia	519	.....	.....	.....	72	89	.....	.....	.....	.....	.....	.....	.....	.....	5,451
Ecuador	10	.....	.....	.....	165	150	.....	.....	.....	.....	.....	.....	.....	.....	4,111
British Guiana	201	.....	.....	.....	198	98	.....	.....	.....	.....	.....	.....	.....	.....	6,264
Dutch Guiana	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Peru	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	99
Uruguay	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Venezuela	773	48	706	144	183	.....	.....	.....	.....	.....	.....	.....	.....	.....	20,086
TOTALS, SOUTH AMERICA	\$139,271	366	.....	\$1,475	3,430	82,596	.....	\$6,459	.....	.....	\$169,839	\$73,535	\$791,120	.....	.....
ASIA:															
British India	\$10,523	.....	.....	.....	4,464	82,199	.....	.....	.....	.....	.....	.....	.....	.....	.....
Strait Settlements	162	.....	.....	.....	240	11	134	.....	.....	.....	.....	.....	.....	.....	.....
Other British East Indies	201	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Dutch East Indies	9,986	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
French East Indies	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hongkong	11,783	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Japan	16,423	376	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Siam	51	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
TOTALS, ASIA	\$51,288	720	.....	\$2,059	7,436	\$5,625	.....	\$2,353	\$184,335	\$4,233	\$70,428	\$22,222	\$342,543	.....	.....
OCEANIA:															
Australia	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
New Zealand	5,010	504	.....	\$1,130	1,560	821	419	.....	.....	.....	.....	.....	.....	.....	.....
French Oceania	10	.....	.....	.....	157	185	.....	.....	.....	.....	.....	.....	.....	.....	.....
German Oceania	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Philippine Islands	34,960	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
TOTALS, OCEANIA	\$79,214	504	.....	\$1,130	11,789	\$6,915	.....	\$1,248	\$93,191	\$11,148	\$35,504	\$52,909	\$281,359	.....	.....
AFRICA:															
British West Africa	\$4,222	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
British South Africa	9,336	24	.....	\$72	2,264	\$1,247	.....	.....	.....	.....	.....	.....	.....	.....	.....
French Africa	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Libya	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
TOTALS, AFRICA	\$13,558	24	.....	\$72	2,384	\$1,351	.....	.....	.....	.....	.....	.....	.....	.....	.....
TOTALS	\$412,803	26,870	.....	\$117,173	66,501	\$53,024	.....	\$58,853	\$1,291,534	\$66,400	\$465,688	\$588,119	\$3,052,893	.....	.....

Compiled by the Bureau of Foreign and Domestic Commerce, Department of Commerce, Washington, D. C.

EXPORTS OF INDIA RUBBER FROM MANAOS DURING THE MONTH OF DECEMBER, 1918.

EXPORTERS	NEW YORK.				EUROPE.				TOTALS.	GRAND TOTALS.
	Fine.	Medium.	Coarse.	Cauchos.	Fine.	Medium.	Coarse.	Cauchos.		
F. A. Adams & Co., Inc.	566,779	61,487	56,600	25,138	560,004	24,130	.....	.....	74,120	634,124
General Rubber Co. of Brazil	121,635	72,498	15,632	90,235	300,000	75,000	.....	.....	75,000	375,000
Lamson, Port & Co.	108,254	23,777	46,904	180,800	45,000	.....	.....	.....	45,000	448,000
Stowell & Co.	76,621	20,407	2,143	21,562	120,723	28,109	.....	.....	28,109	148,831
Adelbert H. Alden, Limited	.....	.....	.....	.....	50,150	.....	.....	.....	50,150	50,150
F. G. Arango	.....	.....	.....	.....	45,700	.....	.....	.....	45,700	45,700
Higson & Fall	1,141	.....	.....	2,980	15,431	.....	.....	.....	20,000	20,000
H. Levy & Co.	.....	.....	.....	.....	.....	.....	.....	.....	15,020	15,020
F. Eschbach	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
TOTAL	106,411	178,169	121,279	210,199	1,215,958	353,099	.....	.....	353,099	1,569,057

Compiled by the Bureau of Foreign and Domestic Commerce, Department of Commerce, Washington, D. C.

EXPORTS OF INDIA RUBBER FROM PARA, MANAOS AND IQUITOS DURING THE YEAR OF 1918.

NEW YORK.

EUROPE.

EXPORTERS.	Fine.	Medium.	Coarse.	Caucho.	TOTALS.	Fine.	Medium.	Coarse.	Caucho.	TOTALS.	GRAND TOTALS.
J. Marques & Co., <i>Para, Brazil</i>	1,042,760	11,599	901,610	424,974	2,482,648	7,706	2,716	15,510	1,000	364,266	2,846,854
General Rubber Co. of Brazil, <i>Para</i>	87,916	459,942	881,312	2,370,817	3,799,987	1,000	6,712	15,510	1,000	346,942	2,717,759
Stowell & Co., <i>Para</i>	172,393	498,096	457,035	1,824,731	3,952,255	1,000	48,749	15,510	1,000	581,872	2,406,604
Stowell & Co., <i>Manaos</i>	67,589	156,179	457,245	1,191,261	2,412,275	1,000	1,000	15,510	1,000	481,229	1,672,490
G. Fradette & Co., <i>Manaos</i>	98,000	195,101	153,775	669,697	2,116,573	1,000	1,000	15,510	1,000	267,000	1,380,214
Bank of Brazil, <i>Manaos</i>	1,789	116,131	230,246	67,879	807,414	1,000	1,000	15,510	1,000	807,414	807,414
Chamo & Co., <i>Manaos</i>	1,789	116,131	230,246	67,879	53,858	1,000	1,000	15,510	1,000	73,259	730,129
Price & Co., <i>Manaos</i>	1,789	116,131	230,246	67,879	43,428	1,000	1,000	15,510	1,000	43,428	2,300,322
Adelbert H. Allen, Limited, <i>Manaos</i>	308,748	4,875	91,575	25,922	331,069	159,447	1,000	1,000	1,000	159,447	610,517
Bitar & Iribarren, <i>Manaos</i>	1,789	116,131	230,246	67,879	19,620	1,000	1,000	15,510	1,000	34,800	552,806
Sundries, <i>Manaos</i>	1,789	116,131	230,246	67,879	177,138	1,000	1,000	15,510	1,000	366,565	1,171,866
Exports from Para.....	2,277,885	484,048	2,616,306	3,476,045	11,554,084	3,139,726	71,120	174,714	151,603	3,546,663	15,078,009
Exports from Manaos.....	545,235	1,111,030	1,254,431	9,252,193	11,943,889	133,978	44,539	15,510	1,000	2,218,270	11,464,572
Exports from Iquitos.....	13,743	104,394	106,175	628,916	949,553	20,820	43,965	91,960	1,000	551,296	1,000,214
TOTALS.....	1,043,026	4,031,730	6,836,651	21,429,302	5,481,086	225,918	260,218	339,009	6,000	231,772,725	

(Compiled by Messrs. Price & Co., Manaos, Para, Brazil)

EXPORTS OF INDIA RUBBER FROM MANAOS DURING THE YEAR OF 1918.

NEW YORK.

EUROPE.

EXPORTERS.	Fine.	Medium.	Coarse.	Caucho.	TOTALS.	Fine.	Medium.	Coarse.	Caucho.	TOTALS.	GRAND TOTALS.
General Rubber Co. of Brazil, <i>Manaos</i>	1,266,473	370,596	321,494	1,333,432	3,292,060	39,960	15,040	15,510	1,000	255,000	3,547,000
F. A. Mendes & Co., <i>Manaos</i>	16,532	153,900	162,465	560,319	2,637,770	216,342	340	15,510	1,000	219,912	2,856,700
Stowell & Co., <i>Manaos</i>	676,473	131,000	162,465	560,319	1,550,487	214,556	11,200	51,000	26,750	257,606	1,808,093
Tancorello, Porto & Co., <i>Manaos</i>	576,753	104,227	242,017	435,140	1,358,137	146,007	3,366	1,000	1,000	1,51,471	1,509,608
Bank of Brazil, <i>Manaos</i>	90,726	107,27	107,269	73,274	204,496	83,104	3,067	1,000	1,000	87,196	291,692
G. Fradette & Co., <i>Manaos</i>	63,963	5,831	9,576	88,780	167,250	100,810	1,000	1,000	1,000	100,810	268,060
Adelbert H. Allen, Limited, <i>Manaos</i>	63,963	5,831	9,576	88,780	167,250	100,810	1,000	1,000	1,000	100,810	268,060
B. Levy & Co., <i>Manaos</i>	1,789	116,131	230,246	67,879	95,934	37,137	1,000	1,000	1,000	110,802	1,220,915
F. G. Arango, <i>Manaos</i>	1,789	116,131	230,246	67,879	165,304	11,957	1,000	1,000	1,000	12,959	193,598
Moraes, Carneiro & Co., <i>Manaos</i>	1,789	116,131	230,246	67,879	30,000	24,680	2,967	1,000	1,000	28,240	58,240
B. Levy & Co., <i>Manaos</i>	1,789	116,131	230,246	67,879	18,757	33,020	1,806	1,841	1,841	37,424	56,181
Amorim Irmãos, <i>Manaos</i>	1,789	116,131	230,246	67,879	33,020	33,020	1,806	1,841	1,841	37,424	56,181
F. Escalante, <i>Manaos</i>	1,789	116,131	230,246	67,879	2,230	2,900	320	136	136	30,356	32,586
Stowell & Sons, <i>Manaos</i>	1,789	116,131	230,246	67,879	12,094	12,094	1,000	1,000	1,000	12,094	12,094
Sundries, <i>Manaos</i>	1,789	116,131	230,246	67,879	1,333	1,333	1,000	1,000	1,000	1,333	1,333
TOTALS, Manaos.....	3,908,578	870,364	1,315,712	3,270,322	9,365,006	5,535,742	78,450	38,558	94,173	2,746,923	12,111,926
In transit, Iquitos.....	138,406	634,351	132,733	340,346	1,245,836	134,747	47,486	9,470	37,100	648,304	1,573,984
TOTALS.....	4,126,984	1,504,545	1,448,447	3,610,668	10,609,642	2,689,889	125,936	48,028	131,280	2,995,127	13,685,771

(Compiled by Stowell & Co., Manaos, Brazil)

RUBBER STATISTICS FOR THE DOMINION OF CANADA.

[For the year ended March 31.]

IMPORTS OF CRUDE AND MANUFACTURED RUBBER

(Twelve Months Ended March 31.)

	1917.	1918.
UNMANUFACTURED.....	POUNDS. VALUE.	POUNDS. VALUE.
Rubber, gutta percha, etc.:.....		
From United Kingdom.....	4,968,050	\$3,286,816
British East Indies.....	18,079	1,065
Straits Settlements.....	651,847	418,355
India.....	64	38
French Indochina.....	.....	1,540
Japan.....	.....	35,286
Congo Free State.....	.....	31,361
Stowell & Sons.....	3,099,897	3,028,623
TOTALS.....	10,757,968	\$6,744,899
Rubber, recovered.....	148,406	820,499
From United Kingdom.....	11,436	7,783
British South Africa.....	4,723,323	690,665
United States.....	.....	4,476,572
TOTALS.....	4,883,162	\$7,113,887
Hard rubber sheets and rods.....	83,123	\$56,271
Rubber substitute.....	631,509	59,442
Rubber, powdered, and rubber or gutta percha waste.....	1,555,284	106,360
Rubber thread, not covered.....	45,650	68,595
TOTALS.....	12,959,247	\$7,249,440
Balata, crude.....	12,966	\$9,907
Chicle.....	.....	4,036
From British Honduras.....	2,930,317	\$1,065,953
Mexico.....	1,279,634	\$2,683,321
United States.....	1,980,361	\$683,753
TOTALS.....	6,290,482	\$2,280,338
MANUFACTURED.....	POUNDS. VALUE.	POUNDS. VALUE.
Boots and shoes.....	101,579	\$264,954
From United Kingdom.....	.....	441,134
United States.....	186,682	.....
TOTALS.....	188,261	\$264,954
Waterproof clothing.....	84,766	\$43,264
Belted hose, and packing.....	271,490	\$173,953
Rubber tires for all vehicles.....	1,246,476	2,375,650
Other manufactures.....	1,075,605	221,673
TOTALS, manufactured.....	3,074,654	\$3,781,804

EXPORTS OF DOMESTIC AND FOREIGN MERCHANDISE.

Twelve Months Ended March 31.

	1917.	1918.
Produce of Canada.....	POUNDS. VALUE.	POUNDS. VALUE.
Reexports of Foreign Goods.....	.....	.....
Rubber, gutta percha, etc.:.....		
From United Kingdom.....	1,317,725	\$812
British East Indies.....	11	257,46
Straits Settlements.....	.....	6,082
India.....	.....	1,698
French Indochina.....	.....	1,540
Japan.....	.....	35,286
Congo Free State.....	.....	31,361
Stowell & Sons.....	3,099,897	3,028,623
TOTALS.....	12,959,247	\$7,249,440
Balata, crude.....	12,966	\$9,907
Chicle.....	.....	4,036
From British Honduras.....	2,930,317	\$1,065,953
Mexico.....	1,279,634	\$2,683,321
United States.....	1,980,361	\$683,753
TOTALS.....	6,290,482	\$2,280,338
MANUFACTURED.....	POUNDS. VALUE.	POUNDS. VALUE.
Boots and shoes.....	101,579	\$264,954
From United Kingdom.....	.....	441,134
United States.....	186,682	.....
TOTALS.....	188,261	\$264,954
Waterproof clothing.....	84,766	\$43,264
Belted hose, and packing.....	271,490	\$173,953
Rubber tires for all vehicles.....	1,246,476	2,375,650
Other manufactures.....	1,075,605	221,673
TOTALS, manufactured.....	3,074,654	\$3,781,804

RUBBER STATISTICS FOR THE DOMINION OF CANADA.

Imports of Crude and Manufactured Rubber.

	1917.	1918.
UNMANUFACTURED.....	POUNDS. VALUE.	POUNDS. VALUE.
Rubber, gutta percha, etc.:.....		
From United Kingdom.....	4,968,050	\$3,286,816
British East Indies.....	18,079	1,065
Straits Settlements.....	651,847	418,355
India.....	64	38
French Indochina.....	.....	1,540
Japan.....	.....	35,286
Congo Free State.....	.....	31,361
Stowell & Sons.....	3,099,897	3,028,623
TOTALS.....	10,757,968	\$6,744,899
Rubber, recovered.....	148,406	820,499
From United Kingdom.....	11,436	7,783
British South Africa.....	4,723,323	690,665
United States.....	.....	4,476,572
TOTALS.....	4,883,162	\$7,113,887
Hard rubber sheets and rods.....	83,123	\$56,271
Rubber substitute.....	631,509	59,442
Rubber, powdered, and rubber or gutta percha scrap.....	1,555,284	106,360
Rubber thread, not covered.....	45,650	68,595
TOTALS.....	12,959,247	\$7,249,440
Balata, crude.....	12,966	\$9,907
Chicle.....	.....	4,036
From British Honduras.....	2,930,317	\$1,065,953
Mexico.....	1,279,634	\$2,683,321
United States.....	1,980,361	\$683,753
TOTALS.....	6,290,482	\$2,280,338
MANUFACTURED.....	POUNDS. VALUE.	POUNDS. VALUE.
Boots and shoes.....	101,579	\$264,954
From United Kingdom.....	.....	441,134
United States.....	186,682	.....
TOTALS.....	188,261	\$264,954
Waterproof clothing.....	84,766	\$43,264
Belted hose, and packing.....	271,490	\$173,953
Rubber tires for all vehicles.....	1,246,476	2,375,650
Other manufactures.....	1,075,605	221,673
TOTALS, manufactured.....	3,074,654	\$3,781,804

UNITED KINGDOM RUBBER STATISTICS.

IMPORTS.

Year Ended December 31.
1917. 1918.

MANUFACTURED—	QUANTITIES	VALUE	QUANTITIES	VALUE
Crude rubber:				
Russia.....	14,128.00	£1,937,039	7,805,500	£932,287
French West India.....	914.00	78,132	304,100	25,559
GOI Ceylon.....	2,684,000	141,434	785,500	60,747
Other African countries.....	7,806,000	801,522	6,476,900	602,396
India.....	3,187,500	140,096	850,500	94,258
Brazil.....	23,862,700	3,344,676	9,550,900	1,201,943
British India.....	4,729,100	639,666	4,378,500	519,123
Straits Settlements and dependencies, including Labuan.....	40,749,500	5,651,670	28,697,300	3,457,738
Federated Malay States.....	48,967,100	6,822,112	16,399,600	1,947,567
Ceylon and dependencies.....	26,291,900	3,642,901	27,173,000	3,174,991
Other countries.....	4,352,700	581,698	2,644,400	319,117
Totals.....	175,583,100	£23,781,346	105,066,200	£12,126,522
Waste and reclaimed rubber.....	2,890,500	70,962	238,100	3,508
Totals.....	178,473,600	£23,852,308	105,304,300	£12,130,030
Gutta percha.....	7,192,300	1,111,578	10,548,800	£1,973,534
MANUFACTURED—				
Boots and shoes—down pairs.....	140,895	£253,580	30,841	£241,451
Waterproof clothing.....	.....	9,047	.....	22,117
Carriage tires and tubes.....	.....	7,977	.....	602,645
Automobile tires and tubes.....	.....	1,121,280	.....	15,524
Motorcycle tires and tubes.....	.....	7,721	.....	20,414
Bicycle tires and tubes.....	.....	73,178	.....	35,756
Insulated wire.....	.....	35,756	.....	2,240
Totals.....	.....	£1,621,249	.....	£904,665

EXPORTS.

MANUFACTURED—				
Waste and reclaimed rubber.....	16,205,800	£296,152	7,108,200	£183,858
MANUFACTURED—				
Boots and shoes—down pairs.....	.....	6,660,131	.....	£479,224
Boots and shoes—down pairs.....	103,130	114,919	89,220	124,371
Insulated wire.....	.....	161,647	.....	89,876
Waterproof clothing.....	.....	217,295	.....	528,544
Carriage tires and tubes.....	.....	1,108,636	.....	153,385
Automobile tires and tubes.....	.....	1,131,446	.....	153,644
Motorcycle tires and tubes.....	.....	134,952	.....	261,686
Bicycle tires and tubes.....	.....	344,855	.....	1,479,962
Insulated wire.....	.....	1,041,791	.....	1,479,962
Totals.....	.....	£4,504,711	.....	£4,442,138

EXPORTS—FOREIGN AND COLONIAL.

MANUFACTURED—				
Crude rubber:				
Russia.....	8,971,000	£1,183,410	.....	.....
France.....	29,035,200	22,387,700	4,066,500	£2,695,580
United States.....	67,968,400	3,872,900	9,005,900	680,715
Other countries.....	11,486,300	9,470,900	1,643,973	1,151,284
Totals.....	117,460,900	£16,499,795	37,631,315	£4,527,579
Waste and reclaimed rubber.....	555,700	21,058	7,980	2,825
Totals.....	118,016,600	£16,520,853	37,711,300	£4,530,404
Gutta percha.....	351,500	247,800	50,722	43,697
MANUFACTURED—				
Boots and shoes—down pairs.....	27,376	£34,961	893	£4,257
Waterproof clothing.....	.....	332	.....	121
Insulated wire.....	.....	79,623	.....	3,224
Carriage tires and tubes.....	.....	2,528	.....	1,619
Automobile tires and tubes.....	.....	405,573	.....	56,521
Motorcycle tires and tubes.....	.....	15,288	.....	897
Bicycle tires and tubes.....	.....	10,162	.....	9,291
Totals.....	.....	£548,806	.....	£75,941

RUBBER STATISTICS FOR ITALY.

IMPORTS OF CRUDE AND MANUFACTURED RUBBER.

Nine Months Ended September 30.

MANUFACTURED—	QUANTITIES	1917	1918
India rubber and gutta percha—raw and reclaimed:			
From Great Britain.....	8,661	.....	6,111
India and Ceylon.....	13,508	.....	5,760
Straits Settlements.....	3,800	.....	24,074
French Africa.....	1,165	.....	4,504
Peleian Congo.....	1,065	.....	251
India.....	17,760	.....	13,812
Other countries.....	850	.....	2,134
Totals.....	48,706	53,576,600	56,946
Rubber, waste and reclaimed.....	7,915	949,800	1,751
MANUFACTURED—			
India rubber and gutta percha—Threads.....	341	750,200	498
Cut sheets.....	5	11,000	2
Elastic fabric.....	6	4,400	.....
Other kinds, including hard rubber.....	101	121,200	161
Totals.....	458	865,600	661

Nine Months Ended September 30.

MANUFACTURED—	QUANTITIES	1917	1918
Tubes:			
From cut sheets.....	1	2,200	4
Elastic fabric.....	50	45,000	87
Other forms.....	6	6,000	2
Bellings.....	366	402,600	410
Rubber-cured fabrics—pieces:			
For car and combs.....	323	419,900	149
Other forms.....	158	237,000	8
From France.....	6,046	27,565	3,772
United States.....	19,023	302,856	3,472
Other countries.....	169	169	169
Elastic webbing.....	34	46,800	194
Clothing and articles for travel.....	3	21,000	15
Manufactures n. e. s.:.....	.....	.....	.....
Cut sheets.....	133	133,000	78
Elastic fabric.....	1,067	1,208,100	1,078
Tires and tubes:			
From France.....	1,147	1,982	444
Other countries.....	1,741	2,980,200	444
Other rubber manufactures.....	106	1	1
From France.....	794	1,692	1,692
Other countries.....	1,496	5,555,600	2,651
Totals, manufactured.....	18,471,156	14,061,928	14,061,928
Total imports.....	72,977,556	76,916,248	76,916,248

EXPORTS OF CRUDE AND MANUFACTURED RUBBER.

MANUFACTURED—				
India rubber and gutta percha—raw and reclaimed:				
To Spain.....	1,548	1,299	.....	.....
United States.....	2,529	782	.....	.....
Totals.....	4,076	1,423,800	2,081	728,350
MANUFACTURED—				
India rubber and gutta percha—Threads.....	218	479,600	30	66,000
Cut sheets.....	6	12,000	21	42,000
Elastic fabric.....	25	20,000	22	17,600
Insulated wire.....	2	1,000	3	1,500
Other forms, including hard rubber.....	81	81,000	22	22,000
Tubes:				
From cut sheets.....	6	13,200	19	41,800
Elastic fabric.....	197	157,600	109	87,200
Other forms.....	266	252,700	108	102,600
Bellings.....	168	12,000	85	85,000
Rubber-cured fabrics—pieces.....	160	201,600	40	48,000
Elastic webbing.....	1,582	3,005,800	881	1,673,900
Clothing and articles for travel.....	33	92,400	8	22,400
Manufactures n. e. s.:.....	.....	.....	.....	.....
From cut sheets.....	56	133,200	45	99,000
Elastic fabric.....	102	112,200	89	97,900
Tires and tubes:				
To France.....	2,373	2,857	.....	.....
Great Britain.....	6,883	1,773	.....	.....
Spain.....	127	8	.....	.....
Switzerland.....	0	51	.....	.....
India and Ceylon.....	1,079	51	.....	.....
Dutch East Indies.....	350	441	.....	.....
Straits Settlements.....	1,545	.....	.....	.....
Australia.....	2	.....	.....	.....
Argentina.....	961	191	.....	.....
Brazil.....	1,089	434	.....	.....
Other countries.....	903	366	.....	.....
Totals, tires.....	15,911	20,684,300	6,292	8,179,600
Other rubber manufactures.....	.....	.....	.....	.....
To France.....	193	152	.....	.....
Great Britain.....	167	103	.....	.....
Spain.....	28	7	.....	.....
Switzerland.....	154	116	.....	.....
Egypt.....	15	27	.....	.....
Argentina.....	392	94	.....	.....
Brazil.....	154	46	.....	.....
Uruguay.....	71	8	.....	.....
Other countries.....	189	91	.....	.....
Totals.....	1,313	1,313,600	644	644,000
Total exports.....	.....	27,985,400	.....	11,968,850

A quintal = 50 to pounds.

A lira = \$0.193.

THE MARKET FOR COTTON AND OTHER FIBERS.
NEW YORK.

THE American cotton market has been fairly steady during the month when, with minor fluctuations, spot middling uplands has held around 26 cents. The steady undertone is due to current belief in the strong financial and commercial position of this country, and the certain prospects of increasing export trade in cotton. Lower prices, therefore, are not expected in the near future.

EGYPTIAN COTTON. It is estimated that the 1918 crop will amount to about five million cantars but on account of the quantity of the 1917 crop which was carried over and ginned with the 1918 crop, the final statistics will probably show about 5,400,000 cantars. A cantar is approximately 98 pounds.

It is doubtful if there will be enough cotton to cover present sales of government type No. 1. Owing to the poor quality of the crop, Sakellarides types of extra staple will be very scarce.

SEA ISLAND COTTON. The southern markets have been exceedingly quiet and quotations are nominal. From August 1, 1918, to January 31, 1919, 38,104 bales were received, compared with 47,813 bales last year. After deducting exports, the stock on hand was 15,268 bales, compared with 17,207 bales last year. On January 31, 1919, the crop in sight at all ports was 22,340 bales, compared with 46,599 bales a year ago.

DUCKS, DRILLS, AND OSNABURGS. While market conditions are not what they should be at this time, they are better than last month, owing to a noticeably better demand. Prices have declined.

RAINCOAT FABRICS. A few large sales were reported last month but nearly all orders were very small and for spot deliveries. Buyers who have kept out of the market for a long period may be at a disadvantage when the necessity comes for placing quantity orders.

TIRE FABRICS. Although the market was generally quiet and prices easier than a month ago, there has been a steady demand for comparatively small stocks for immediate delivery. Quotations are slightly lower than at this time last month and in fact considerably lower than a year ago when there was no immediate prospect of industrial activity.

NEW YORK QUOTATIONS.

FEBRUARY 24, 1919.

Prices subject to change without notice.

AIRPLANE AND BALLOON FABRICS:

Wamsutter, S. A. I. L. No. 1, 40-inch.....	yard	.60 @
No. 4, 38½-inch.....		.50 @

ASBESTOS CLOTH:

Brake lining, 2½ lbs. sq. yd., brass or copper inter-	lb.	*.85 @
tion		
2½ lbs. sq. yd., brass or copper inter-	lb.	*.90 @
tion		

BURLAPS:

32- 7-ounce.....	100 yards	6.25 @
32- 8-ounce.....		6.60 @
40- 7½-ounce.....		7.25 @
40- 8-ounce.....		7.40 @
40-10-ounce.....		10.75 @
40-10½-ounce.....		11.00 @
45- 7½-ounce.....		none
45- 8-ounce.....		9.50 @
45- 9½-ounce.....		none
48-10-ounce.....		15.75 @

DRILLS:

38-inch 2.00-yard.....	yard	.24½ @
40-inch 2.47-yard.....		.23 @
52-inch 1.90-yard.....		.28½ @
52-inch 1.95-yard.....		.27½ @
60-inch 1.53-yard.....		.35½ @

DUCK:

CARRIAGE CLOTH:		
38-inch 2.00-yard enameling duck.....	yard	.27½ @
38-inch 1.74-yard.....		.31½ @
72-inch 16.66-ounce.....		.57½ @
72-inch 17.21-ounce.....		.60½ @

MECHANICAL:

Hose.....	pound	*.11 @
40-inch, 10-ounce.....		*.11½ @
Beltung.....		*.11 @

HOLLANDS, 40-INCH:

Acme.....	yard	.28 @
Endurance.....	3 ards	.60 @
Penn.....	yard	.32 @

OSNABURGS:

40 inch 2.35-yard.....		.237½ @
40 inch 2.48-yard.....		.22½ @
37½-inch 2.42-yard.....		.23½ @

RAINCOAT FABRICS:

COTTON:

Bombazine 64 x 60 water-repellent.....	yard	1.15 @
60 x 48 not water-repellent.....		1.14 @
Cashmeres, cotton and wool, 36-inch, tan.....		.80 @
cotton and wool 36-inch, black.....		.83½ @
Oxford.....		.65 @
lin and black.....		.65 @
Tails 64 x 72.....		.50 @
64 x 102.....		.50 @
Twill, mercerized, 36-inch, tan and olive.....		.27½ @
lin and black.....		.50 @
Tweed.....		.85 @
Tweed, printed.....	yard	.16 @
Plaids 60 x 48.....		1.25 @
50 x 44.....		.17 @
Repp.....		.36½ @
Surface prints 60 x 48.....		.13½ @
64 x 60.....		.15 @

IMPORTED WOOLEN FABRICS SPECIALLY PREPARED FOR RUBBERIZING

—PLAIN AND FANCIES:

63-inch, 3¼ to 7½ ounces.....	yard	1.15 @
36-inch, 2¼ to 5 ounces.....		.80 @

IMPORTED PLAID LINING (UNION AND COTTON):

63-inch, 2 to 4 ounces.....	yard	.90 @
36-inch, 2 to 4 ounces.....		.52½ @

DOMESTIC WORSTED FABRICS:

36-inch, 4½ to 8 ounces.....	yard	.60 @
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DOMESTIC WOVEN PLAID LININGS (COTTON):

36-inch, 3¼ to 5 ounces.....	yard	.18 @
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SHEETINGS:

JACKET:

Delaware.....	yard	.28 @
Sauykill.....	yard	.30 @

SILKS:

Canton, 38-inch.....	yard	.36½ @
Schappe, 36-inch.....		.55 @

TIRE FABRICS

JENCKES SPINNING COMPANY

PAWTUCKET RHODE ISLAND

TIRE FABRICS.

7 1/2 ounce	Sisal, Island, combed	1.45	9	1.25
17 1/2 ounce	Egyptian, combed	1.20	9	1.20
17 1/2 ounce	Egyptian, cutted	1.15	9	1.15
17 1/2 ounce	Egyptian, combed	1.10	9	1.10
17 1/2 ounce	Perdes, cutted	1.85	9	1.80

* Natural.

THE MARKET FOR CHEMICAL AND COMPOUNDING INGREDIENTS.
NEW YORK.

MARKET conditions of the base metals, lead, zinc, and antimony, have been quiet and dull during the past month and curtailment of output continues with regard to pig lead. The rubber trade in general is showing a decided improvement in buying activity, indicating confidence on the part of manufacturers, which doubtless will increase as knowledge is gained of the readjustment of economic factors involved in world peace. Prices are easing off and the general demand for price reduction is being anticipated in most lines.

ANILINE.—The decline of prices has resulted in improved demand which has now become active.

CARBON TETRACHLORIDE.—The demand continues rather light and prices steady.

BENZOL.—Similar conditions hold with regard to benzol as in the case of carbon tetrachloride.

DRY COLORS.—The demand is very light and prices tend to recede.

LITHARGE.—Quiet routine market with prices fixed.

LITHOPONE.—There has been some improvement in demand and the spring outlook is said to be decidedly good. Manufacturers are anticipating lower costs on their crude materials for the second quarter of the year.

PINE TAR and similar pitches are in very good demand by the rubber trade at fair prices.

SUBSTITUTES.—Prices are easing off rather more than is indicated in the limit prices given. Crude stocks are generally lower.

WHITING.—There has been a steady demand and unchanging prices. Imports are not yet increased. Consequently the short supply does not permit reduction in prices.

ZINC OXIDE.—Market conditions are very steady and no immediate change is anticipated by the manufacturers.

NEW YORK QUOTATIONS.

FEBRUARY 24, 1919.

Prices subject to change without notice.

ACCELERATORS, ORGANIC.

Accelerator N. C. C.	.50	@
Accelerator No. 1.	.37	@
Accelerene	.65	@
Accelmal	.65	@
Aldehyde ammonia crystals	1.00	@ 1.25
Aniline oil	.30	@
Accelerex	.85	@
Hexamethylene tetramine (powdered)	1.15	@ 1.25
Paraphenylenediamine	.30	@
Tensolite	.30	@
Thiocarbamide	.30	@
Velocite	.60	@

ACCELERATORS, INORGANIC.

Lead, dry red oxide	.10	@
Sulphated blue oxide	.10	@
Sulphated white oxide	.08	@
White, basic carbonate	.10	@
Lead citrate	.25	@
Lead flour	.10	@
Litharge, domestic	.09	@
Litharge	.10	@
Magnesium carbonate	.10	@
Hydromag	.10	@
Calcined heavy (Thistle)	.45	@
Calcined light (Manhattan)	.45	@
Magnesium oxide, light	.25	@
Magnesium oxide, heavy	.25	@
Magnesia, calcined, powdered	.10	@

ACIDS.

Acetic, 28 per cent (bbls.)	3.25	@ 4.00
Acetic, 70 per cent (carboys)	1.25	@ 1.50
Acetic, 90 per cent (carboys)	1.90	@ 1.15
Acetic, 95 per cent, dark	.90	@ 1.00
Acetic, 36 degrees	1.60	@ 1.80
Acetic, 36 degrees	1.60	@ 1.80
Acetic, 36 degrees	1.60	@ 1.80

ALKALIES.

Caustic soda, 76 per cent (bbls.)	.07	@
Soda ash (bbls.)	.04	@

COLORS.

Black:		
Bone, powdered	.05	@
granulated	.09	@
Carbon black (sacks, factory)	.15	@ .25
Ivory	.06	@
Ivory black	.16	@
Lumpblack	.15	@
Oil soluble aniline	.10	@
Rubber black	.07	@

Blue:

Cobalt	.25	@ .35
Prussian	.10	@
Ultramarine	.18	@ .50

Brown:

Iron oxide	.04	@
Ochre, domestic	.02	@ .04
imported	.05	@ .08
Sienna, Italian, raw and burnt	.06	@ .15
Umber, Turkey, raw and burnt	.06	@

Green:

Chrome tile	.16	@
Oxide of chromium (sacks)	.15	@

Red:

Antimony, crimson, sulphure of (sacks)	.48	@
crimson, "Mephisto" (sacks)	.55	@
Antimony, golden, sulphure of (sacks)	.27	@
golden, "Mephisto" (sacks)	.28	@
golden sulphure (States)	.28	@
red sulphure (States)	.25	@
vermillion sulphure	.55	@
Arsenic, red sulphide	.09	@
Indian, pure bright	.09	@
Iron oxide, reduced grades	.12	@
Ochre, light or dark	.16	@
Oil soluble aniline, red	2.00	@
orange	.15	@
Extramarine	.18	@
Venetian	.03	@
Vermilion, English, pale, medium, dark	1.65	@

White:

Aluminum bronze	.65	@
C. P. (cases)	.75	@ .69
superior	.70	@ .75
Lithopone, imported	None	
domestic	.07	@ .07
Ponolith (carloads, factory)	.06	@ .07
less carloads, factory	.07	@
Zinc oxide, Horehead (less carload, factory):		
"XXX" red	.10	@
"Special" red	.10	@
French process, red seal	.12	@
green seal	.13	@
white seal	.13	@
(States)	.09	@
zinc sulphide	.07	@ .07

Yellow:

Cadmium, trisulphate	*2.68	@
sulphide, yellow, light, orange	2.00	@
red	1.85	@
Chrome, light and medium	.30	@
Ochre, light or dark	.03	@
Oil soluble aniline	1.20	@
Zinc chromate	.55	@

COMPOUNDING INGREDIENTS.

Aluminum flake (bbls, factory. Less 5% carload)	29.00	@
(sacks factory. Less 5% carload)	26.00	@
Aluminum oxide	*.18	@
Ammonia carbonate, powdered	.14	@ 14%
Asbestos (bags)	15.50	@ 20.00
Barium, carbonate, precipitated	60.00	@ 65.00
sulphide, precipitated	35.00	@ 37.50
Barytes, pure white	35.00	@
off color	35.00	@
uniform floated	35.00	@
Basofor	.04	@
Blanc fixe	.04	@
Bone ash	.06	@
Chalk, precipitated, extra light	.05	@ .05%
precipitated, heavy	.04	@ .04%
China clay, domestic	.15	@
imported	.18	@ .25
Cork flour	.05	@
Cotton linters, clean, mill run, f. o. b. factory	None	
Fossil ash (granulated)	60.00	@
glue	65.00	@
medium	.51	@
low grade	.22	@
Graphite, flake (400 pound bbl.)	.10	@ .25
amorphous	.04	@ .08
Ground glass FF. (bbls.)	.93	@
Insufusional earth (bbls.)	65.00	@
colloidal	65.00	@
Mica, powdered	.03	@ .05
Plaster of Paris	.30	@
Pumice stone, powdered (bbl.)	.05	@
Rotten stone, powdered	.03	@ .04%
Rubber flux	.15	@ .25
Rub-R-Glu	.20	@
Silica (silica)	25.00	@

Soapstone, powdered, domestic.....	ton	5.40	44.00
Starch, powdered corn (carload, bbls.).....	cwt	4.34	99
Talc, American (carload, bags).....	cwt	4.02	99
Talc, French.....	ton	2.50	None
Tripoli earth, powdered.....	lb.	0.11	50
Whiting, Alba.....	ton	50.00	83.00
Whiting, commercial.....	cwt	80	90
Whiting, clippers.....	cwt	1.20	1.35
Paris, white, American.....	cwt	1.30	1.25
English chertstone.....	cwt	1.25	1.25
Wood, white, imported.....	ton	10.00	10.00
Wood flour, American.....	ton	10.00	10.00

MINERAL RUBBER.

Gilsonite (carloads factory).....	ton	5.00	50.00
Genasoc (carloads factory).....	ton	57.00	50.00
M. R. (carloads factory).....	ton	65.00	50.00
M. R. (carloads factory).....	ton	100.00	50.00
Liquid rubber.....	lb.	15.00	50.00
Ponomet, carload, factory.....	ton	55.00	50.00
Ponomet, less carload, factory.....	ton	75.00	50.00
Richmond No. 64.....	ton	50.00	50.00
Richmond No. 64.....	ton	55.00	50.00
Refined Flatrite.....	ton	45.00	50.00
Raven M. R.....	ton	60.00	50.00
Rubber (carload, factory).....	ton	50.00	50.00
Walgate rubber flax (factory).....	lb.	25.00	50.00

OILS.

Castor, N. O. U. S. P. (carload).....	ton	10.00	50.00
Corn, crude (bbls.).....	lb.	10.00	50.00
Cotton seed (carload).....	ton	10.00	50.00
Glycerine (98 per cent).....	lb.	1.25	27
Glycerine, raw (carloads).....	gal.	1.15	27
Linseed compound.....	gal.	1.00	27
Palm (Nigeria).....	lb.	1.17	27
Peanut.....	lb.	1.17	27
Petrolatum O.....	lb.	1.17	27
Petroleum grease.....	gal.	0.60	27
Pine, steam distilled.....	gal.	0.60	27
Pine tar.....	gal.	1.34	27
Rapeseed, refined.....	lb.	1.17	27
Rosin.....	gal.	0.60	27
Soybean.....	lb.	1.17	27
Tar, commercial (case).....	gal.	0.35	36
Norecord No. 30.....	gal.	0.65	27

SOLVENTS.

Acetone (98.99 per cent drums).....	lb.	1.10	27
Benzol, C. P. (drums).....	gal.	0.23	27
Benzol, 90 per cent.....	lb.	0.60	27
Carbon bisulphide (drums).....	lb.	0.65	27
Naphtha, motor gasoline (steel bbls.).....	gal.	24.00	27
73 @ 76 degrees (steel bbls.).....	gal.	24.00	27
68 @ 70 degrees (steel bbls.).....	gal.	24.00	27
Solvent.....	gal.	24.00	27
V. M. & P. (steel bbls.).....	gal.	24.00	27
Toluol, pure.....	gal.	24.00	27
Turpentine, spirits.....	gal.	24.00	27
Osmao reducer.....	gal.	24.00	27
Nyloil, pure.....	gal.	24.00	27
commercial.....	gal.	24.00	27

SUBSTITUTES.

Black.....	lb.	1.17	27
White.....	lb.	1.17	27
Brown.....	lb.	1.17	27
Brown factice.....	lb.	1.17	27
White factice.....	lb.	1.17	27
Paragol soft and medium (carloads).....	cwt	17.00	27
hard.....	cwt	16.50	27

VULCANIZING INGREDIENTS.

Lead, black hypophosphite (Black Hypo).....	lb.	2.00	27
Orange mineral, domestic.....	lb.	1.17	27
Sulphur chloride (drums).....	lb.	0.60	27
Sulphur, flour, Brooklyn brand (carloads).....	cwt	6.00	27
pure soft (carloads).....	cwt	6.00	27
superfine (carloads, factory).....	cwt	5.50	27

(See also Colors Antimony)

RESINS AND PITCHES.

Canella gum.....	lb.	1.17	27
Pine tar, retort.....	bbl.	15.00	27
Pitch, Burelund.....	bbl.	14.00	27
coal tar.....	lb.	0.60	27
pine tar.....	lb.	0.60	27
Resin, Pontianak, refined.....	lb.	1.17	27
granulated.....	lb.	1.17	27
used.....	lb.	1.17	27
Rosin, K.....	lb.	0.07	27
powdered.....	lb.	0.17	27

Shale, fine, orange, V. S. O.....	lb.	78	27
Tar, kiln.....	bbl.	12.75	27
retort.....	bbl.	13.75	27

WAXES.

Wax, beeswax, white.....	lb.	.68	.70
ceresin, white.....	lb.	.50	.50
ozokerite, black.....	lb.	.60	.60
green.....	lb.	.80	.80
montan.....	lb.	.33	.33
paraffin, refined 118/120 m. p. (cases).....	lb.	1.17	27

*Nominal

THE MARKET FOR RUBBER SCRAP.

NEW YORK.

DURING the month of February the market for scrap rubber has been extremely quiet. Stocks throughout the country are large and constantly increasing. The reclaimers are far from busy and are anxiously awaiting the resumption of a normal demand for their product.

The impending influx of crude rubber from the Far East has a depressing effect on the prices of scrap rubber, since there seems to be no possibility of a marked advance in crude rubber prices. Scrap shoes and tires must come down to a basis which will permit competition with prices for new rubber. It is not a pleasant prospect, but it looks as though dealers in scrap rubber will find it expedient to devote their attention to other waste materials during the dull period.

BOOTS AND SHOES.—Scrap rubber dealers who are working on old orders are offering more for old shoes than any mill will offer. The price is nominal at 8 cents.

INNER TUBES.—Practically no demand.

MECHANICALS.—No inquiries at all. Prices unchanged.

TIRES.—Quotations for mixed remain at 5 cents with no sales worth mentioning.

NEW YORK QUOTATIONS FOR CARLOAD LOTS DELIVERED.

FEBRUARY 24, 1919.

Prices subject to change without notice.

BOOTS AND SHOES.

Acute tops.....	lb.	.0134	@
Boots and shoes.....	lb.	.0714	@ .08
Trimmed articles.....	lb.	.0614	@ .0614
Untrimmed articles.....	lb.	.0514	@ .0514

HARD RUBBER.

Battery jars, black compound.....	lb.	*.01	@
No. 1, bright fracture.....	lb.	.25	@

INNER TUBES.

No. 1, old packing.....	lb.	.22	@
No. 2, new packing.....	lb.	.11	@ .1114
Red.....	lb.	.11	@ .1114

MECHANICALS.

Black scrap, mixed, No. 1.....	lb.	.0414	@
No. 2.....	lb.	.0314	@
Car springs.....	lb.	.0414	@
Hose.....	lb.	.0514	@ .0514
Horse-shoe pads.....	lb.	.04	@ .0414
Hose, air-brake.....	lb.	.05	@ .0514
fire, cotton lined.....	lb.	.05	@ .0514
garden.....	lb.	.01	@
Insulated wire stripping, free from fiber.....	lb.	.0314	@ .0314
Mating.....	lb.	.01	@
Packing.....	lb.	.01	@
Red scrap, No. 1.....	lb.	.01	@
No. 2.....	lb.	.01	@ .0114
White scrap, No. 1.....	lb.	.01	@ .0114
No. 2.....	lb.	.01	@ .0114

TIRES.

PNEUMATIC.

Auto peelings, No. 1.....	lb.	.10	@ .1014
No. 2.....	lb.	.09	@ .0914
Bicycle.....	lb.	.01	@ .0114
Standard white auto.....	lb.	.0514	@ .0514
Standard mixed auto.....	lb.	.0414	@ .0414
Striped, unguaranteed.....	lb.	.0314	@ .0314
White, G. & G. M. & W. and U. S.....	lb.	.0514	@ .0514

SOLID.

Carriage.....	lb.	.01	@ .0114
Irony.....	lb.	.01	@ .0114
Truck.....	lb.	.01	@ .0114

*Nominal



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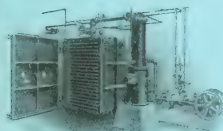
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37,500,000 TIRES FOR 1919.

THE total number of passenger automobiles and trucks registered in the United States for the year 1918 was 6,088,169, representing an increase of 1,026,555 cars over 1917, despite the war curtailment of manufacture. Nearly 70 per cent of these new cars were Fords, the Ford output of passenger cars and trucks for the fiscal year ended July 31, 1918, being 706,584 cars. The 1919 Ford campaign calls for an output of 1,000,000 cars, and as other companies contemplate similar increases, the 1919 registration will probably jump at least 1,500,000.

These statistics forecast an American output of some 37,500,000 tires for the year. Assuming five tires per car as the average yearly consumption—four in use and one spare, it will require 30,440,845 tires to operate the cars registered at the end of 1918. The 1919 production of cars will call for 6,000,000 tires as original equipment, and for each of these cars a spare will quickly be bought, thereby adding 1,500,000 to the grand total. It remains only to deduct something for the old cars that may go out of service during the year. This will hardly exceed and probably not equal 440,845 tires, the odd part of the first item, so that 37,500,000 tires may be regarded as a conservative estimate, especially in view of the depleted

condition of American tire stocks following the curtailment period.

LIGHTING THE RUBBER FACTORY.

IN this era of superproduction too much attention cannot be paid to the lighting system in a rubber factory. Upon its perfection and scientific arrangement depend the quality of the product, the standard of the output and the efficiency of the employee. In the early days of factories kerosene lamps and open-burner jets were the only sources of artificial light available. Then came the incandescent lamp in 1879, as great a revolution in its way as the gas jet was over the old whale-oil lamp or tallow dip. With the development of the Mazda and other types of lamps came practical perfection.

Wise factory managers now recognize that lighting is not an expense to be minimized, but is a most important aid to economic production and may even become the deciding factor between profit and loss. Here is a typical test to show the relation of light to output.

In a Chicago factory a lighting system using incandescent lamps in deep bowl reflectors, was carefully designed to provide four-foot candles of illumination. The men worked under these conditions for a period. Then the intensity was increased to 12-foot candles, in other words the lighting was trebled. This change was attended by an 8 to 27 per cent increase in production. These figures cover eight different operations, which averaged a 15 per cent increase.

Insurance companies recognize that suitable light is as essential to the safety of employees as any of the safeguards which are applied to belts, pulleys and gears. Codes of lighting have been devised in many states supervised by the Department of Labor for the protection of employees. These bodies have recognized that many accidents may be avoided by proper lighting. The plant operator should ask himself the questions: "Is there artificial illumination in every part of the plant likely to be traversed by workmen? Are all moving parts clearly visible, and are the lights so shielded that a man will not be temporarily blinded and thus not be able to see gears, belts, and other mechanisms?"

Good lighting is furthermore reflected in the faces of the operators, in healthful, buoyant spirits. Bad lighting is irritating because it makes it difficult to see, and the mind unconsciously becomes obsessed with the idea that it is being imposed upon. The experienced and trained man is not easily replaced, and under a bad lighting system he becomes incapacitated at the very time when he should be yielding the best returns.

Of the cost of a modern system an Edison expert says: "Assuming the rate of wage is 25 cents per hour, the power cost is 2 cents per kilowatt-hour, and that a 100-watt Mazda C lamp is provided for each operator, the total cost of operation of this lamp, including renewals and cleaning, would be about 4/10 cent per hour. Therefore, if with this lighting a man can save one minute per

hour, the extra cost of lighting is more than paid for in the saving on labor cost alone."

MR. ROCKEFELLER'S TIMELY CAUTION.

THAT Labor and Capital are partners, not enemies; that their interests are common, not opposed, and that neither can attain the fullest measure of prosperity at the expense of the other, but only in association with the other, is the preamble of a creed contained in a most timely pamphlet entitled "Representation in Industry," just issued by John D. Rockefeller, Jr. Mr. Rockefeller, than whom no employer in this country is better qualified to discuss industrial subjects, strikes at the root of the industrial question when he emphasizes that the Community is an essential party to industry and that it should have adequate representation with the other parties.

It is the purpose of Mr. Rockefeller to show that the four parties to industry—Labor, Capital, the Management and the Community—should be so represented that disputes should be equitably settled, fair wages and reasonable hours assured, capital be justly compensated and management be adequately recognized. He does so in a most convincing manner, and cites the example of the Standard Oil Co. in some of its branches where a system of representation has been adopted which has worked for the good of all concerned and which has minimized the troubles which constantly arise in large concerns.

In a keen, incisive manner, Mr. Rockefeller analyzes the cause of misunderstandings often so disastrous to all concerned and condemns the capitalists "who regard Labor as their legitimate prey," from whom they are justified in getting all they can for as little as may be, equally with the attitude of Labor whose sentiment is to wrest everything possible from Capital. These two forces he declares are to blame for the strike, the lockout and other incidents of industrial warfare. Mr. Rockefeller's system of mutual cooperation and discussion by the four parties interested for the purpose of eliminating these causes for turmoil, which of late seem to be multiplying not only in this country, but elsewhere, is a most valuable contribution and is well worth the perusal of all who want to see progress replace strife, and an era of good feeling succeed the present overcharged atmosphere of discontent and recrimination.

AS TO THE RAINY DAY.

CARTER GLASS, the new Secretary of the Treasury, has inaugurated his term of office with a government campaign to make "Thrifty a Happy Habit." This is the title of a booklet issued by the Government to the people of the United States "to promote wise buying, avoidance of waste, intelligent saving, and safe investment, with the aim of meeting war obligations and promoting individual, community, and national prosperity"

and "to make earnings and time count more for the individual."

The governors of the 12 Federal Reserve Districts have been requested to develop special savings machinery in each district with the idea of stimulating the sale of Thrift and War Savings Stamps. On the subject of "Every Day Economics" the following pertinent advice is given:

"If the well-to-do would save all they could and furnish the Government with funds by buying bonds and thrift stamps and by paying taxes, and if those with smaller incomes would do likewise, together they might be able to save enough for the use of the Government and at the same time furnish it with funds to buy what they saved. But if many of them, either rich or less well-to-do, refused to do their part they would force others to do more than their share.

"Sane spending is the basis of intelligent saving and elimination of waste," continues Mr. Glass, "whether of commodity or time. In making purchases, the buyer should make certain whether he gets his money's worth in commodity, comfort, service, recreation or advancement."

"Provision must be made for the rainy day and unforeseen emergencies—or opportunities—when they occur. Intelligent saving is diametrically opposed to hoarding or miserliness. It consists largely in foregoing ill-considered or foolish present expenditures in order to be able to obtain in the future necessities or even luxuries."

The purpose of the great campaign is to pay all war bills, maintain our troops and to bring them home, to create a powerful agency for the Americanization of the foreign-born—and to establish a "practical eraser for the hyphen" as well as to afford the greatest benefits to the workers in protection for the future, and providing for a rainy day.

THE INDUSTRIAL BOARD OF THE DEPARTMENT OF Commerce is a new creation of great importance. The board in consultation with industrial leaders plans to stabilize prices through governmental purchases of basic materials. It is not price fixing. It is simply a big buyer coming into the market with the cooperation of all other big buyers, sellers and producers. Thus will stagnant business be energized, capital be freed, building operations be resumed and normal industrial activity be restored.

THE DAILY PRESS ANNOUNCES ANOTHER WORLD TOUR OF the yacht *Oneida*, under the personal command of the veteran rubber factor, Commodore E. C. Benedict. It is claimed, by the newspapers, that Commodore Benedict once penetrated to the head waters of the Orinoco in this same sea-going yacht. Not to seem too skeptical we will allow that if any man in the world could negotiate the rapids above Angostura in a big vessel it would likely be the Commodore.

The Production of Guayule Rubber—II.¹

From a special report by Henry C. Pearson, prepared for the Bureau of Foreign and Domestic Commerce.

HABITAT OF GUAYULE—PARASITIC ENEMIES.

GUAYULE at its best is found growing on the central Mexican plateau in great quantities. The district is nearly rainless and is very sparsely populated by a race partly Indian, partly Spanish. The region is practically grassless and contains no large trees, being a typical desert country. The alkali earth which is found over most of the plateau is in reality a rich soil, needing only sufficient water to make the region a very fertile one.

The guayule is indigenous in a comparatively small area in southwestern Texas and northern Mexico. It may be bounded as follows: from the western extremity of the Rio Grande, Texas, the line runs somewhat west of south till it reaches the northern boundary of Durango, Mexico, near Santa Barbara, Chihuahua, then southeastward with the Mexican frontier.

GATHERING AND TRANSPORTING THE SHRUB.

Although the most important guayule districts command good railway facilities, there are large areas whose exploitation is difficult on account of the lack of means of transportation. These difficulties are mainly due to the fact that water for the pack animals can not be found on these desert lands.

The gathering is done under contract by natives, who simply pull the plant and load it on the back of burros. It is then carried to a central station, where it is baled by ordinary hay balers. These bales are loaded upon large wagons, which are drawn across the desert by teams of mules, often 12 to 14 to the team. The cost of transporting the crude material is not great. A burro driver gathers the loads for two or three animals, each carrying an average load of 165 pounds. For an



FACTORY OF THE COMPAÑIA PRODUCTORA GUAYULENSES, S. A., PUEBLO MEXICO.

Railway about 100 kilometers (62 miles). Beyond the State of Durango the boundary runs still farther east curving northward again not far from San Luis Potosi. The one hundred and first meridian marks roughly the eastern boundary, lying somewhat west of it till beyond Saltillo, where the line then curves slightly west of north, reaching the eastern limit in Texas at Langtry. The northern limit is marked approximately by Fort Stockton. The total area is approximately 130,000 square miles, a large part of which is in the Chihuahuan Desert. This area varies in altitude from 2,000 to 10,000 feet above sea level, and the most important acreage is not much above 6,000 to 6,500 feet.

According to Lloyd,² guayule has few parasitic enemies, either vegetable or animal. Of the former, two are species of fungi, the *Puccinia parthenii* and the dodder (*Cuscuta* sp.). Of the latter there are Coccidiae that attack the tap root. There is also a scale, *Targionia dearnessii* Ckll., which attacks roots. The leaves are sometimes attacked by a gall insect, and there is a bark-boring beetle, the *Pitophthorus nigricans* Bland.

entire day's journey (12 kilometers and return) and three loads (495 pounds) the transportation charges per ton of crude material would be, say, \$2.50 to \$3. For long distances, however, the cost sometimes runs as high as \$12.50 per ton.

PRICES OF SHRUB AND COST OF EXTRACTED RUBBER.

The price of dried guayule plants, including charges, began at \$7.50 a ton. Later, when several competing enterprises erected factories, the price rose to \$15 and \$20 per ton, according to the distance between the places of origin and the station or works. During the "boom" growing guayule was bought unharvested at \$30 gold per ton in the field and up to \$50 gold per ton delivered at the factory. A fair average of the cost of guayule shrub to the leading concerns was about \$30 gold per ton c. i. f. factory, allowing for shrinkage until used, which must be within 60 days of cutting to prevent deterioration of the rubber.

Calculating the high cost of coal and water, it was estimated that the rubber could be extracted and freighted to New York and sold there at a cost of 20 to 25 cents per pound. This included all costs, taxes, traveling options, office expenses, etc., but not royalties on processes used.

¹Continued from THE INDIA RUBBER WORLD, MARCH 1, 1919.

²"Guayule, a Plant of the Chihuahuan Desert," page 40.

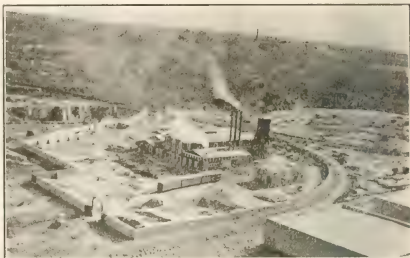
ESTIMATING THE SUPPLY OF SHRUB.

The supply of guayule in its territory is very unevenly distributed. In most parts the plants are isolated, growing sometimes in large and often in small numbers among other plants on mountain inclines rich in lime. At rare intervals small spaces are found where it predominates. The following estimate was made by Endlich:

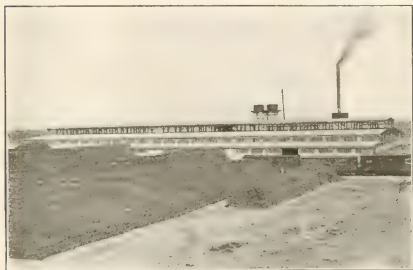
An estimate of the average supply per hectare (2.47 acres) is very difficult to make, both on account of the uneven distribution of the growth and of the great differences in individual plants. In favorable territory I have on several occasions counted 36 to 41 plants to an area of 100 square meters, which would mean a total supply of 3,600 to 4,000 plants per hectare. The differences in size and weight are so great that in places where the plants are small and grow close together to plants have only the weight of 1 kilo (2.2 pounds), while in the best territory some of the trees weigh as much as 3 kilos each. The average weight will not exceed 500 grams (1.1 pounds) per plant. Estimates of the guayule supply in large areas vary from 500 to 900 kilos per hectare, but the distances between the distant places where the plants are found are often considerable and must be taken into consideration. The territory containing the more important places of supply includes a total area of about 75,000 square kilometers (about 29,000 square miles).

It is even more difficult to approximate the total supply of crude material. Let us assume that in the area of 75,000 square kilometers, comprising the districts where the guayule plant is principally found, one-tenth actually contains a supply; this would mean a territory of 75,000 hectares. If we

in two ways, by seeds and by means of shoots (retones) which start up from the shallow-lying roots. Retones are relatively few in number, but their initial growth is rapid and they quickly produce flowers. Even the remaining portion of roots broken



COMPANIA EXPLOTADORA DE CAUCHO MEXICANO, SALTILLO, MEXICO.



CONTINENTAL RUBBER CO., TORREON, MEXICO.

figure the output as one-half ton per hectare, we get a total supply of 375,000 tons, which at the rate of 7 to 10 per cent rubber, represents a total of 26,250 to 37,500 tons of rubber.

In 1906 a number of experts figured on the amount of shrub available for extraction. The following tabulation is based on their estimates and a selling price for crude rubber at 45 cents gold per pound:

Owners of Shrub.	Estimated Yield of Shrub, Metric Tons.	Estimated Yield of Rubber, Metric Tons.	Estimated Profit, Excluding Royalties.
No. 1	57,000	6,840	\$3,009,600
No. 2	40,000	4,800	2,112,000
No. 3	10,000	1,200	528,000
No. 4	8,000	960	422,400
No. 5	27,000	3,240	1,455,600
No. 6	8,000	960	422,400
No. 7	3,000	360	158,400
No. 8	35,000	3,600	1,320,000
No. 9	20,000	2,400	1,056,000
No. 10	12,000	1,440	633,600
No. 11	8,000	960	422,400
No. 12 (scattered holdings)	47,000	5,640	2,481,600
Consumed to June, 1906	10,000	1,200	528,000
Permanently unavailable	25,000	.....	.....
Totals	310,000	33,000	\$14,519,400

REGROWTH IN WILD AREAS.

In the first collection of the guayule shrub the plant was uprooted. To a certain extent some roots were broken off and formed new growths. If, however, instead of being pulled up the plant is cut off under the surface of the soil, the root that remains will, if rain falls within a reasonable time after the cutting, reproduce a good plant. The self-sown seeds grow slowly, several years showing only a thin one-fourth-pound bush. Natural reproduction in the field therefore takes place

off where the plants are uprooted frequently produce new plants, and this after dying back quite a distance. Thus with reasonable care the existing guayule fields may be preserved.

One of the large operators advised the writer concerning regrowth in these words:

On this point we have had great encouragement, as experiments made from territory cut over some years ago show that there will be a second cut of some size, and if the country is visited by rains we may count on a steady though slow development of this second growth. This can never reach proportions large enough to warrant us in expecting an output anywhere near the yield of 1910, but it will make it possible for some of the factories to maintain a constant if diminished output. From the present outlook and from the experiences gained in the past the rubber trade may count on an annual production indefinitely of somewhat over 2,000 tons. These figures are based on the supposition that the price of guayule will not go below 45 cents nor above 75 cents per pound. If the price should go below 45 cents there will be less guayule produced than the above figures, and if it goes above 75 cents there will be an increase over these figures temporarily, with acceleration of the consumption of the available shrub and the consequent reduction of the future supply. High prices for



SALVADOR MADERO & CO., VANEAS, MEXICO.

rubber mean high prices for the shrub and a resultant destruction of the young and growing shrub, as anything that appears like guayule will be cut and shipped to the factories by the shrub owners greedy for money.

(To be continued.)

SAMPLES OF CRUDE PLANTATION RUBBER.

The Bureau of Foreign and Domestic Commerce of the United States Department of Commerce has been furnished with samples of crude plantation rubber graded in accordance with the classifications, in use here as follows: unsmoked diamond sheet smoked diamond sheet (light), smoked diamond sheet (dark), unsmoked plain sheet, smoked plain sheet, pale crêpe (variable), brown crêpe (variable), blanket crêpe (variable). The samples may be examined at the Bureau of Foreign and Domestic Commerce, or its district offices, by referring to file No. 108614.

Chrysothamnus or Sierra Rubber.

WHETHER the United States in the near future is destined to produce its own rubber within its limits in commercial quantities is a problem which still remains to be solved. The investigation which was undertaken by experts of the University of California, shortly after the United States entered the war, and an account of which was printed in THE INDIA RUBBER WORLD June 1, 1918, is still proceeding, but up to date the investigators are of the opinion that it is not possible to obtain rubber commercially from the wild plants which grow so abundantly in the Sierras and in other parts of the West.

Professor H. M. Hall of the University of California, who is in charge of the research work, while declining to go into detail as to the extent of the discoveries until a complete report can be made, is authoritative for the broad statement that the total amount of wild shrub with a rubber content is "so great that it is safe to say there is enough rubber present to constitute an emergency supply in case we ever get into a war in which our importation would be curtailed, but the extraction of this would be an expensive process; since the average content for the whole West is probably not more than 2½ per cent, and even in the best districts it will not run more than 4 or 5 per cent on the average."

Professor Hall is quite certain that rubber cannot be obtained commercially from the wild plants with the price of rubber anywhere near what it now is. In connection with this matter he says: "It is sometimes stated that the plants can be profitably grown. This is entirely within the realm of possibility, and one phase of our work is looking toward investigation in that connection, for it would be impossible to demonstrate at the present time that there would be any profit in growing the plants."

Professor Hall's forthcoming report will contain a comprehensive résumé of the possibilities of the various wild plants of the western regions which are known to contain rubber. There are several of them in unlimited quantities, but the most "interesting sort" as Professor Hall terms it, has been designated the "Common Green." "This is a variety of the *Chrysothamnus nauseosus*," he continues, "but I cannot give the Latin equivalent for the varietal name at present, since the variety has not been described and it would not be well to use the name ahead of the description. . . . We are finding that this 'common green,' as we call it, averages only about 3 per cent, although individual plants, and some of them very large ones, carry as much as 6 per cent. These figures are for absolutely pure rubber and are based upon dry weight. There are many interesting developments in connection with our

studies, but it is not permitted me to speak of these at present."

That the United States may be on the verge of a discovery of the greatest importance to the rubber trade is entirely within the range of possibility, and that a most important beginning has been made is entirely apparent. The fact that the supply is sufficient for an emergency, despite the cost involved in its production, is alone well worth consideration, although the end of the war has rendered it exceedingly improbable that such an emergency will arise in the near future. Although sensational reports have been printed from time to time in the daily papers

as to the probabilities of a commercial supply of rubber existing in the West, Professor Hall has not gone farther than in his original statement on the rubber discovery, which is to be amplified in his complete report to be made this spring. He stated:

"For two months the writer carried on field surveys in eight Western States in order to make estimates of the tonnage and distribution of rubber-carrying shrubs and to gather samples for chemical analysis. The results indicate that the total amount of rubber present is much greater than we originally supposed, although the percentage content of the shrubs is perhaps less over much of the area covered.

"Four of our experimental plots in Eastern California have been studied and evidence obtained which indicates that it will be necessary to destroy the plants in order to harvest the rubber. On the other hand, a method is being developed which gives promise of increasing the weight of the rubber-carrying portions and will be particularly applicable if the plants are brought under cultivation.

"In order to get an expert opinion on the quality of the product 25 pounds of shrub were sent to Dr. D. Spence, chairman of the sub-committee on rubber and allied substances of the National Research Council. After some months, during which time deterioration probably took place, the rubber was separated by the ordinary mechanical means and a per cent of pure rubber obtained. This was tested and reported upon as of 'high grade and average quality—not as good as fine Pará, but a great deal better than most African low grade rubbers.' Dr. Spence also reported that 'the rubber vulcanizes readily and gives a product of very fine quality.'"

In order to give an idea of the inexhaustible supply of rubber-producing plants in California it may be stated that there are 70 species of them in that state, containing from 1 to 10 per cent rubber, according to Professor Marcus E. Jones, who has been assisting Professor Hall. Professor Jones, who was formerly with Colorado College, has extended investigations over Utah, Idaho, Nevada, Wyoming, and Colorado.



CHRYSOETHAMNUS NAUSEOSUS OR "COMMON GREEN."

The "Common Green," which Professor Hall describes as the "most interesting" which he has investigated, grows 7 feet high and an illustration of it accompanies this article. The specimen was taken from the north side of Mono Lake, Mono County, California. The rubber from it is said to be a little better than that from guayule. Another variety of rubber plant is the *Ericameria*, or "dwarf rabbit bush." It is very small and grows sparsely in rocky places. Its rubber content is 10 per cent, but the product is very short and very resinous.

The investigation now nearly concluded is certain to bring

up the subject of utilizing the great waste lands of the Sierras in the cultivation of these rubber producers. These lands are available and cheap, and need no irrigation. That the rubber is there is demonstrated, and undoubtedly other experiments are under way in greatly separated parts of the United States to demonstrate whether this supply cannot be utilized by stimulating the growth of these plants and demonstrating its commercial possibilities. The forthcoming report will be treated at length in THE INDIA RUBBER WORLD and should be of the greatest interest to the whole rubber trade.

What Won the War?

ARMAMENT makers, ship builders, explosive manufacturers, airplane and balloon constructors, naturally consider their own individual products as vital factors in the victory of the Allies.

Sidney Neu, of the great Westinghouse companies, however, claims that electricity won the war. Though it was not in evidence he argues that were it not for man's control of this subtle fluid there would have been no victory.

Developing the argument, he says:

Think back to the gunsmith of a century ago. Could he have armed an army of four million men in eighteen months? With four million men withdrawn from production, could any army have been equipped? Electrically driven machine tools made possible what human sweat and muscle never could have accomplished.

Unheard of tons of steel have been required, and those best able to judge have said that without electric drive to speed production in the mills we should have fallen short.

Uniforms were needed to clothe the men who fought. They could not go naked while weavers leisurely wove the cloth, cutters shaped it, and tailors sat cross-legged slowly stitching seams. Electricity was called on to do these things with speed, and the uniforms were made—breeches, shirts, leggings, shoes, underwear, hats, belts, millions of them.

The chemicals that speeded the shells on their way, that burst the shells to fragments, that made the very air untenable for the foe, owed their production in the tremendous quantities required to electricity. Electrochemical processes fashioned some, electric drive furnished the controllable mechanical power for making others.

The Army and the nation needed food and electricity produced it. Fertilizers produced by electrochemical means made the earth productive, electric drive threshed much of the wheat, prepared the meat, operated the packing plants, ground the flour, entered everywhere into the production of food to make human labor less and to release more men to carry fear to the hearts of barbarians.

In its gentler aspects electricity appeared even on the field of battle, guiding armies, battalions, even individual shells. The airman by his wireless telephone and telegraph guided the gunner far in the rear who would otherwise have been blind. The commander watched through his wire and wireless network the progress of his fighting units miles away, kept them correlated into one vast machine that acted as a whole, not as a multitude of unrelated parts.

Billions of billions of electric sparks daily ignited the cylinder charges of motor trucks, lorries, airplanes, motor cars, motorcycles and the victorious tanks. Without electricity for ignition these engines would have been unheard of.

Electricity enabled the ships at sea, with their precious freight of American manhood, to keep each other in touch, to avoid the hidden dangers that menaced, to signal back as each arrived, "We're here, and safe!"

The ships themselves—did not electricity produce them? Their plates were rolled and shaped and machined in electrically driven machinery. Electric cranes transported their parts, electric compressors furnished the power behind the busy riveters.

Speed won the war when it was won and saved millions of human lives and untold additional human suffering—America's speed. The world marvels at America's speed and even America marvels. America was capable of this unheard of speed because America has made electricity its servant. Many men have been needed to accomplish what has been done in preparation, but at least twice and probably three times as many men would have been needed had not electricity been ready to help; and there was not that many men.

Electric light in battlefield searchlights patrolled the sky and No Man's Land, guarding against surprise. At home protective electric lighting dispensed with many human guards who thus could lend their hands to much-needed production. Within the busy plants men worked through the long hours of night as swiftly as by day, because electric illumination was at hand.

So short was the man-power that even with electricity's help women were required to lend their aid in making ready our fighters' equipment. Without electricity women's help would have been but feeble. It is because electric drive tames rough forces and makes cumbersome machinery so simple to manipulate that it was possible for women to do what only men had done before. Work with machinery had been considered man's exclusive sphere because it had been rough work, heavy work. Electricity has made it such light work that it no longer fatigues the frailest sex.

Nor is this alone electricity's part in putting women at the lathe, the punch-press and the planer. It has simplified the home so that she can be spared. We forget the duties that women formerly had in the home. She was spinner and weaver and tailor, she was laundress and housemaid, baker and cook, milkmaid and charwoman. Electrical machinery and electrical transportation have taken many of these duties out of the home. Those that are left, washing, ironing, sweeping, cooking and sewing, electricity has so lightened that women have been able to take their part in saving the world for those that dwell in it. Where many women were needed in the "good old days" to keep one household running smoothly, one alone now finds time to spare.

Trace back to its source any thing or factor that has helped to end the struggle, and electricity is found, not once but many times to have touched it and hastened it on to consummation. Truly, electricity has won the war, electricity guided by American brains, led on by American energy, crowned by American valor.

In every instance, however, electricity was walled in, concentrated, guided, held in check, rendered efficient, made safe by rubber. In the last analysis, therefore, india rubber won the war!

Echoes of the Great War.

THE VICTORY LIBERTY LOAN.

THE Secretary of the Treasury, Carter Glass, in his first address to the people, issued an appeal to prepare for the Fifth Liberty Loan which the financial demands on the Government dictate must be floated at an early date. Mr. Glass urged the preservation of the same patriotic spirit that has been shown in raising previous loans and recommended that all bond-selling organizations be continued. He noticeably commented on the fact that Americans once for all have disproved the slander that they are merely a money-loving people, incapable of rising above materialistic things.

As reasons for exerting a particular effort in preparing to raise the Fifth Liberty Loan, which is to be called the Victory Liberty Loan, Mr. Glass stated that the expenditures of the Government for that portion of the fiscal year between July 1 and December 16, 1918, excluding transactions in the principal of the public debt, exceeded \$9,600,000,000; that it is estimated that the cash outflow from the Treasury during the fiscal year ended June 30, 1919, will be \$18,000,000,000, of which more than half was spent in the five and one-half months prior to January 1; and that bills incurred during the peak of production of war materials at the time of the signing of the armistice must be paid.

Mr. Glass took into account that the American people face the Victory Liberty Loan with the handicap of the tendency to feel exultant and self-satisfied with what has already been accomplished and the inclination, now that peace negotiations are under way, to resume individual and business activities; but he called attention to the fact that our boys still overseas have their work before them, in which we must support them as heretofore, and he finished his appeal with an expression of confidence in the American people that they will "respond once more to the call for service and will at once prepare the ground and sow the seed, so that the harvest may be abundantly fruitful."

The Victory Liberty Loan campaign will open Monday, April 21, and close three weeks later, Saturday, May 10. The loan will take the form of notes of the United States, maturing in not over five years from the date of issue, the rate of interest to be based on existing conditions just prior to the opening of the campaign, possibly in excess of 4½ per cent, the rate on the last two loans. The amount of notes to be offered has not been announced, but it has been generally understood that it would be a minimum of \$5,000,000,000, with the Treasury reserving the right to accept all oversubscriptions.

Patriotism first and investment opportunity will be among the chief appeals to the people to support this newest loan. Secretary Glass has also explained recently how necessary it is that the new notes secure the widest circulation possible among the people in order that the banks of the country may be relieved of the burden which would otherwise be imposed on them. The business of the country, he points out, looks to the banking system for credit wherewith to carry on its operations, and if this credit is absorbed to a large extent by the purchase of government securities there will be many limitations placed upon the supply of credit for business purposes. The wage-earner is also directly concerned, that full employment at good wages may continue.

REVISED FREE AND "RATIONED" EXPORT LISTS.

The War Trade Board announces that the following rubber products will be licensed freely for export when destined to Denmark, Norway, Sweden, Holland, Switzerland, Luxemburg, Finland and the occupied Rhine provinces. They may be consigned directly to the consignee named in the export license, or "to order." The rubber goods named in the revised list are:

athletic goods, bicycle pedal rubber, rubber erasers, toys, dolls and games of all kinds, including or consisting of rubber.

The "rational" list of exports to Sweden, for which a fixed ration has been provided under the terms of the agreement with the Government of Sweden, includes raw rubber and rubber manufactured goods other than tires and tubes, pedal rubbers, brake blocks of rubber for bicycles, and rubber erasers.

Applications for licenses to export these "rationed" commodities to Sweden will be considered by the War Trade Board only when such applications are accompanied by the numbers of the import certificates issued by the Swedish Handel's Kommission upon the guaranties of the appropriate importing associations, and shipments may be consigned only to such associations.

AMERICANIZATION ACTIVITIES IN AKRON.

If the great world war had served no other purpose than that of inspiring in the minds of the foreign-born people in America a desire to become, first, American, and then so well read and



AN AMERICANIZATION CLASS.

educated that customs and methods of all countries were disclosed to them, it would have achieved a great social change.

American industry has been upheld and operated smoothly by foreign labor, at least seventy per cent of which could not read nor speak the English language. This condition was unfair to both workmen and the industry. In full knowledge of this industrial concerns and educational leaders in Akron, Ohio, have taken up the project of Americanization among foreign workmen, and the Board of Education is urgently advocating the adoption of an Americanization program by every concern in the city.

Perhaps no concern in Akron has taken up this work more seriously than the Firestone Tire & Rubber Co. Classes may be seen assembled under the direction of instructors furnished by the city Board of Education nearly every day in the spacious lounging rooms of the Firestone Club House, which offers unusual facilities for work of this kind.

These men and women are instructed much as children are in the primary grades in school. Classes are divided according to the progress made by the student. Rudimentary English, reading, and the use of the English alphabet form the chief subjects for study in the first classes. As a man develops and acquires a sufficient working knowledge of the English language to carry on his studies for himself, he is urged to read the newspapers and magazines and to obtain for himself information relative to lands, governments, and customs outside of his own native country.

After a student completes a course as described herein, he is

given the privilege of passing an examination for citizenship papers. All aliens who have not already their first papers are urged to take them out, and this class work is intended to enable them to pass the examination which is given for second papers. Summit County common pleas judges have resolved to accept as final evidence that a man is ready for his second papers, his passing an examination which has been prepared by the Assistant Superintendent of Schools. This examination is in the form of a questionnaire.

By the time the student has reached this stage, he has become that for which this entire movement was conceived and placed in operation. He has become an American citizen, a student of civic government, a fellow-being to be respected, and a man whose normal intelligence will no longer be submerged beneath the barrier of foreign nativity.

GOVERNMENT SALVAGE OF WASTE TO CONTINUE.

The likelihood that the Government will maintain a permanent waste reclamation service as a needed conservation measure for the benefit of American industry in time of peace is of great interest to rubber-goods manufacturers. Of the waste materials of various kinds salvaged during the year 1918 by the War Prison Labor and National Waste Reclamation Section, Labor Division of the War Industries Board, and valued at \$1,500,000,000, old rubber was represented to the amount of \$300,000,000.

So good was the showing in salvaging the materials needed by the Government in the prosecution of the war that the work will probably be taken over at an early date by the Department of Commerce and put on a permanent basis. The eighty-six local reclamation councils in leading cities of the country, and some two hundred others in process of formation, are destined to form an endless chain ensuring the assistance of civic and other organizations and school children in establishing permanent municipal bureaus to collect and reclaim all waste materials for peace-time industries just as garbage and ashes are collected. It is the logical way to meet the unprecedented demand for raw materials and will tend to restore retail prices to pre-war levels.

SALES BY ALIEN PROPERTY CUSTODIAN.

A number of rubber and chemical properties of enemy ownership have recently been sold by the Alien Property Custodian. The names of the purchasers and the prices paid are as follows:

The Traun Rubber Co., New York City, bought by William Schrader, 249 Fourth avenue, New York City, for \$20,000. Sale to be approved.

Goetze Gasket & Packing Co., New Brunswick, New Jersey, bought by Peter F. Daly, New Brunswick, New Jersey, for \$57,100. Sale not yet approved.

A. W. Faber, Newark, New Jersey, bought by Theodor Friedberg, 30 Church street, New York City, for \$131,250. Sale has been approved.

Heyden Chemical Works, Gattfield, New Jersey, was sold for \$605,000, but sale was not approved as to price by the Advisory Sales Committee. It was subsequently readvertised for sale.

CHEMICAL FOUNDATION, INC.

The Alien Property Custodian, acting under the authority of the amended Trading with the Enemy Act of November 4, 1918, has organized a corporation known as the Chemical Foundation, Inc., all of whose \$500,000 capital stock has been subscribed for at par in cash by a large number of American manufacturers of chemicals and dyestuffs. The Chemical Foundation, Inc., has purchased from the Alien Property Custodian, for \$250,000 about 4,500 patents covering chemical processes and products, registered in the United States by Germans and other enemy alien owners. The Chemical Foundation, Inc., will issue, without discrimination, non-exclusive licenses to any American manufacturer who may make application therefor, under the terms of which the American manufacturer may use or make the patented processes and products on a moderate royalty basis. The

effect of this plan will be to totally exclude from the United States the importation of any dyes or chemicals made in any country in the world under any of the patents held by the Chemical Foundation, Inc. Of the subscribed capital, \$250,000 is available as a working fund for the prosecution of actions involving the importation or manufacture of products infringing on the patents to which the Chemical Foundation, Inc., has acquired title.

The patents now held by the Chemical Foundation, Inc., cover most of the processes and products used in the dye industry and in addition to this protection afforded under the patent laws, there is now in effect the Tariff Act of September 8, 1916, which imposes a heavy ad valorem duty on finished dyestuffs made from coal tar and smaller ad valorem duties on intermediates, together with specific duties on both finished products and intermediates. These customs duties apply to all synthetic dyestuffs imported, wherever made and by whatever process.

RUBBER MEN RETURNED FROM SERVICE.

The Pennsylvania Rubber Co., Jeanette, Pennsylvania, reports the following men returned from service: Lieutenant George Blair, 18 months in the Naval Aviation service, manager of Philadelphia branch; P. F. Armitage, one year second machinist's mate in the Naval Reserve Force, in charge of northeastern Pennsylvania territory, with headquarters at Philadelphia branch; Milton H. Batz, first-class sergeant, representative in western New York; and William E. Littell, with the Motor Instruction Division, calling on the trade in Central Pennsylvania.

Fred M. Elvidge was recently discharged from the Army and has returned to his former position with the Ajax Rubber Co., Inc., New York City. At the time the armistice was signed he had worked his way up from private until he was about to receive a captain's commission.

WELLMAN-SEEVER-MORGAN DEMONSTRATION.

A novel method of showing how solid tires are put on and taken off the wheels of motor cars was recently inaugurated by an enterprising builder of tire-applying presses. A 200-ton press was installed at a prominent business corner in Cleveland, Ohio, and actual demonstrations of mounting and demounting tires were given.

The exhibit was attractively decorated with oil-painted posters and was flood-lighted at night. Grouped around the press were



AN OUTDOOR TIRE-APPLYING EXHIBIT.

various sizes of tires, up to the largest solids built, including the following well-known makes: Brunswick, Firestone, Good-year, Hood, Kelly-Springfield, Kokomo, Mason, McGraw, Owen, Polack, Republic, Sterling, Swinehart, United States.

The Aeronautical Exposition.

THE Aeronautical Exposition was held in the 69th Regiment Armory and Madison Square Garden, New York City, from March first to fifteenth, under the auspices of the Manufacturers' Aircraft Association. This exposition was a revelation of the remarkable development effected in aircraft by American inventors and manufacturers under the stimulus of the war, and afforded an



The B. F. Goodrich Co.

RIGID TYPE DIRIGIBLE.

inspiring outlook on the commercial possibilities of aircraft applied to passenger transportation. In balloon construction particularly, much has depended on the resources of American rubber companies, since the envelopes of dirigible, kite or observation, and spherical balloons are built entirely of rubberized cloth.

In the United States the manufacture of balloons has been confined largely to The B. F. Goodrich Co., The Goodyear Tire & Rubber Co., and The Connecticut Aircraft Co. All of these companies were represented at the show by exhibits of their typical dirigibles, kite and spherical balloons, and various rubber accessories.

The prediction is freely expressed by those conversant with the problem that the day is at hand when passenger travel by air will be established on a commercial basis as a necessary form of modern transportation. As a commercial factor the dirigible is better adapted for aerial transportation in possessing wider cruising radius and carrying capacity than the airplane. The dirigible by its gas content in the bag is able to stay aloft at all times without the aid of its engines and these are chiefly used as a means of propulsion.

There was suspended in the Armory a navy coast patrol dirigible of Goodrich manufacture of the following dimensions: length, 167 feet; diameter, 33 feet; volume, 80,000 cubic feet. This dirigible had seen 17 months' service. Also in the Armory, The B. F. Goodrich Co. exhibited an interesting collection illustrative of balloon manufacture, such as rubberized balloon cloth; shock absorber cord, consisting of many square, pure rubber threads bound together in cylindrical form by a cover of braided cotton; Gammeter car suspension patches and gas valves; samples of rope knots used in balloon rigging; a model spherical balloon, and airplane cord tires.

In the field of aeronautical production The B. F. Goodrich Co. is credited with 14 dirigibles, 362 observation balloons, over 1,500,000 feet of airplane bumper cord and many Silvertown cord airplane tires, besides many improvements and inventions in balloon manhole flanges, gaskets, glands, etc.

An interesting feature of the Goodrich display was the periodic exhibition of a series of moving pictures showing the manufacture of balloons.

The Goodyear Tire & Rubber Co. exhibit, located in the

Garden, was similar in character and scope to that already described. A Goodyear kite or observation balloon was exhibited and a display made of riggers' knots; various metallic accessories; balloon cloth made from cotton raised on the Goodyear cotton plantation in Arizona; Goodyear balloon gas-valve; the illuminated inspecting table for examining rubberized fabrics; and a model compartment passenger car fitted with sleeping accommodations designed in connection with passenger traffic by dirigible balloon.

The Connecticut Aircraft Co. showed a spherical balloon and a model dirigible as planned for passenger service between New York and Atlantic City, beginning in the autumn of this year.

Wellington, Sears & Co. exhibited a line of balloon fabrics and non-tearing cotton airplane cloth designed for airplane wing covering. Crowning triumphs in this line were the five-and-five basket weave and three-ounce Warwick seamless aero-cord fabrics. The latter is woven similar in design to automobile cord-tire fabric, from chemically purified mercerized 3-ply warp yarns and single spun filling yarns. This fabric, weight for weight, tests 38 per cent stronger than 3½-ounce grade A linen made of uncleaned, single-spun yarns. Similar non-tearing cloths of heavier weight were also shown, intended for balloon making. These deserve investigation on the part of makers



The B. F. Goodrich Co.

KITE OR OBSERVATION BALLOON.

of mechanical rubber goods, as to their adaptability for high-grade hose manufacture and other purposes.

The Bristol Co. exhibited instruments for measuring the speed of aircraft, simple recording thermometers for air, and wet and dry bulb thermometers for recording the hygroscopic state of the atmosphere.

RUBBER MANUFACTURES IMPORTED INTO BOMBAY, BRITISH INDIA.

Unofficial figures showing the general imports of Indian produce into Bombay during the year 1917, as given in the "Bombay Government Gazette," include the following comparisons: 1916—rubber manufactures, \$1,487,250; 1917—\$1,569,772.

The Evaluation of Rubber Plantations.

By *Kelvis Colfax Baker, M.S.F.*

THE evaluation of rubber plantations is a subject of increasing importance to the rubber world. The aggregate value of the planting industry is increasing rapidly because of increased acreage and increased yields per acre. The price of crude rubber is at the same time decreasing, or must necessarily do so in the near future, thereby leaving a smaller margin of profit to the producer. Hence arises the rapidly increasing need for a careful and scientific evaluation of plantation properties. The laxness of the industry in general in realizing the importance of this is seen in the fact that the exact value which most properties are to their owners has never been decided upon. Not only have these evaluations never been made, but there has been no system for calculating values yet evolved which is mathematically correct, and which will hold in court. Innumerable needs for this knowledge might at any time arise, common instances of which might be in the case of damage suits, unjust taxation, any need for accurate assessment, or in the case of selling and buying properties. It will, in short, allow planters and investors to maintain a complete and accurate inventory of their plantation investments.

Every large planter and investor in plantation securities must already have had some instances arise in which a definite system for evaluation would have been of great assistance, and would have added greatly to their sense of security in their investment. In most past evaluations of properties, taking, for example, the late evaluation of one of the largest holdings in the Orient, there have been no two men who have calculated in the same manner, and as a consequence no two evaluations are strictly comparable. For instance, one eminent V. A.—Mr. A.—calculates on the basis of a seven years' purchase of profits, while another equally eminent V. A.—Mr. B.—on the other hand, figures on the basis of a ten years' purchase of profits, and a third—Mr. C.—figures on still another system which includes a seven years' purchase of profits with some sort of an addition to include the value of the buildings, machinery, etc., on the property. Why is Mr. A. justified in assuming that the value of the property is seven years' profit while Mr. B. assumes that it is worth ten years' profit? It comes down merely to a question of the personal fancy of the evaluator. What is the basis of Mr. C.'s addition of an inventory to a seven years' profit? This instance is not exceptional, but typical.

There is more than a merely theoretical difference between a "guess" and "estimate." Any figure in order to be an estimate must have been derived from the combination of some basic assumptions with some definite and logical method for calculation. Otherwise it is a guess. It does not seem to the writer that it is reasonable for the planting industry to guess at the value of properties when there is every probability that by study of the problem there can be evolved a definite and mathematically correct method for estimating their value. The evolving of this method does not mean pioneering to any great extent, as the methods used by modern public utility engineers in evaluating their properties and the method used by bankers in evaluating long-term bonds can be used as guides. This value when obtained should be a maximum value in case of buying properties and a minimum value in case of selling properties. It may often be possible to purchase considerably below this maximum valuation or it may be possible to sell considerably above this minimum valuation, but in each case the negotiator would be very sure that he was doing so rather than merely guessing that he was.

In a memorandum replying to my letter of some months past to Mr. B., the prominent V. A. mentioned before, the advisability

of formulating some definite system was questioned on the point that by so doing "all the individuality of the reports of the different men would be lost." In answer to that the writer may say that any system of calculation, to be of any value whatever, must be elastic, but the calculations may be so systematized that we will have this elasticity, and yet have all the advantages of a definite method of calculation. In engineering reports and in the evaluation of engineering projects certain formulae are used, and certain evaluations are made by prescribed methods, yet engineering reports cannot be said to be "cut and dried" propositions in which no individuality can be shown. The assumptions of the planter may necessarily be less accurate than those of the engineer, but his methods of calculation should be just as accurate and as axiomatic as engineering methods. It is said that figures never lie, but it cannot be said that a system of figuring never lies.

In the memorandum mentioned above, the advisability of having a definite system was questioned by the statement that "although we should have a system, no two reports on one estate would agree." In answer to that the writer may say that this statement in itself is an admission that the use of a definite system for the calculation of estimates and values does not prevent the elasticity which is desired. On the other hand, it will allow two reports which vary in results to be really compared. If the systems of calculation are different they cannot be compared in the proper sense, because the effects of the different systems of calculation used may nullify or increase the effects of any differences in basic assumptions, as to future yields, future prices, future costs of production, etc.

In considering the standardization of any system for calculations there appear to the writer to be at present four main variables, three of which (No. 1, No. 2, No. 3) will ever remain variables, but one of which (No. 4) should become **standardized**. In order to make the reports on any particular property strictly comparable, No. 2 and No. 3 should also be standardized for that particular property. These variables are as follows:

No. 1. Estimates as to yields and cost of production.

No. 2. Estimates as to the price of the product and the profit per pound.

No. 3. Interest desired on the money expended.

No. 4. Method of calculating the value of the profits after the above have been ascertained.

The "estimates as to the yield and cost" (No. 1) will vary with the different men examining the property. In order to give the system the desired flexibility, and to allow each examiner an opportunity of using his individual judgment, this particular branch of the valuation cannot be systematized except in a very general way.

The "estimates as to the price of the product" (No. 2) should be fixed in most cases by the investors—not the V. A. (and in many valuations this has been fixed at an arbitrary figure by them at 40 cents gold per pound of dry rubber). This, with the estimates of the V. A., as to yields and cost of production, (No. 1) will give the "profit per pound."

The third item, or the "interest desired on the money expended," must be furnished by the investors for whom the valuation is being made. In this relation it must be considered that the rubber-planting industry represents an investment which ordinarily lies at a great distance from the investor, and that its success is in very many ways absolutely beyond human control—as is the case in all planting enterprises. It is possible to control quite completely the manufacturing and sales departments of the rubber industry, but the success of the planting and of the

enterprise depends so much upon the climatic factors, the sudden appearance of disease, pests, etc., none of which at the present time seems particularly dangerous, but which in so many planting enterprises have wrecked them, that we cannot say it is completely under control. Hence, there is a risk for which compensation can be made only by an increase in rate of interest demanded by the investor. A fair rate of interest should be: for the owner—the interest rate which he estimates he could get in new investments, with the same risk incurred; for the buyer—the interest rate which he desires to make on this particular investment, considering the risk involved. The writer's personal opinion is that 20 or 25 per cent is a fair rate of interest to use in the calculations for the value of rubber estates, but this will no doubt meet the adverse criticism of optimistic planters who are not buying.

The fourth item, or the "method of calculating the value of the property, after the above estimates of cost, yield, price of the product, and interest rate have been fixed," is the one of most importance to us in any attempt to standardize the evaluation.

The writer believes that a method to be correct must cause the values of the property to vary in correct ratio with the following estimates which form the basis for the evaluation:

- (1) Time required to bring the area into full bearing.
- (2) The amount of money which must be expended per acre to bring the estate into full bearing.
- (3) The time at which this money must be expended.
- (4) Profit on production per year until estate is in full bearing.
- (5) The wait necessary before profits will pay the desired rate of interest.
- (6) Profit on production per year when the estate is in full bearing.
- (7) The age at which we should consider a tree must be replaced.

(These items are, of course, all future estimates—not past expenditures.)

In other words, the calculated value of the property should have a mathematically correct relation to the estimated profits. There may occur instances, however, where, due to some external reason, the value of a property itself will be all out of proportion to the profits obtained, yet even in such a case it is necessary to know its value as a profit-earner before its extraordinary value can be estimated.

The seventh item—the age at which the tree must be replaced, or its economic death—is a very debatable question. The writer believes that generally this will occur in the neighborhood of from 60 to 70 years of age—that is, that the risk involved justifies the investor in considering that his income from the trees will cease to be profitable by that time unless the trees are replaced. This can be lengthened to 100 years, however, without any appreciable difference in result.

That the realization of this need for standardization is not original with the writer is evidenced by the fact that several attempts have been made to develop a system for the calculation. One of these, by a Ceylon and India V. A., has been tried out quite extensively by the writer, and was at one time considered by him to be a solution of the problem, but in the light of further investigation he regrets that he cannot recommend it. While it appears to give fairly good results for properties which are already paying a profit, it is not applicable to properties not yet in the producing stage.

A system, to be applicable, must include the features of farm valuation, in that after the yield starts there is an annual "crop," which in time becomes fairly uniform; and the feature of forest valuation in that there is considerable wait before yield starts, and that profits or "returns" are hence delayed; also, that the income will not continue indefinitely, but probably only a matter of fifty to sixty years.

Another matter which should be considered is the potential value of unplanted areas suitable for rubber planting. For in-

stance, many large planters are paying—and have paid for some years—rental on a large unplanted area, a good proportion of which is suitable for rubber cultivation. Due to its location it can be easily and efficiently managed in conjunction with the present planted area. Its inclusion within the property boundaries is a valuable asset and increases the value of the property as a whole. Consequently, in an evaluation of the property the potential value of this unplanted area should be included.

An adaptation of Schlich's formulae in common use in the evaluation of forests and forest lands can be made applicable to the rubber-planting industry. The principles upon which these formulae are based are as follows:

- (1) The present value of the entire property is equal to the sum of the present value of the planted area, plus the potential value of the unplanted area.
- (2) The present value of the planted area is equal to the estimated income value of the area when in full bearing, calculated at the desired rate of interest, less the total value of all estimated expenditures to be made in order to bring the area up to that state, calculated at the legal rate of interest, and this difference discounted to the present time at the desired rate of interest; plus the sum of the present values of all estimated profits to be made, until the area is in full bearing, calculated at the desired rate of interest.
- (3) The potential value of the unplanted area is equal to the result of the number of acres suitable for rubber planting, multiplied by the potential value of one such acre.
- (4) The potential value of an unplanted acre of rubber land is equal to the estimated income value of one acre when planted and in full bearing, calculated at the desired rate of interest, less the total value of all estimated expenditures to be made in order to bring the area up to that state calculated at the desired rate of interest, and this difference discounted to the present time at the desired rate of interest; plus the sum of the present values of all estimated profits to be made until the acre is in full bearing, calculated at the desired rate of interest.

The mathematical development of these formulae is a detail in which the writer assumes that the reader is not interested at present, but which can be found in Schlich's "Manual of Forest Valuation" and in Roth's "Forest Valuation." Suffice it to say that in these formulae can be included every variable mentioned in the previous paragraphs, and that it appears to the writer that the resultant calculated value of the property will bear a mathematically correct relation to the estimated expenditures and income.

In order to develop this theorizing into the form of concrete workable formulae, let us make the following assumptions:

- (1) Consider a property which contains both planted and unplanted areas;
- (2) Consider that the age of the planted area is five years;
- (3) That profits can be obtained from a planted area during the sixth year of its life;
- (4) That a plantation comes into full bearing at about 15 years of age, and that the yield then continues to be comparatively uniform;
- (5) That the economic life of the tree is ended at about 65 years of age, or 50 years after it is in full bearing.

Then allow these basic assumptions to be represented in the formulae as follows:

E = interest desired by the investor or evaluator;

e = interest at which money to be used for development can be procured;

N = number of unplanted acres available for planting;

$P_1, P_2, P_3, P_4, P_5, P_6, P_7, P_8, P_9$ = estimated net profits from total planted area for the first, second, third, fourth, fifth, sixth, seventh, eighth and ninth years of profits, respectively;

P_{10} = estimated annual net profits which start on the tenth year of profits (when the plantation comes into full bearing) and continues through the economic life of the trees;

$Y_1, Y_2, Y_3, Y_4, Y_5, Y_6, Y_7, Y_8$, and Y_9 —estimated net profits from one acre during the first, second and third to the ninth year of profits, respectively.

Y_{10} —estimated annual net profits from one acre which start on the tenth year of profits (when the acre comes into full bearing), and continue through the economic life of the tree.

C_1, C_2, C_3, C_4 , and C_5 —the excess of estimated expenditures over estimated incomes for the first five years, respectively, at the end of which time it is estimated that the income will exceed expenditure.

The value of planted area is equal to the sum of

$$\frac{P_1}{(1+E)^1} + \frac{P_2}{(1+E)^2} + \frac{P_3}{(1+E)^3} + \frac{P_4}{(1+E)^4} + \frac{P_5}{(1+E)^5} + \frac{P_6}{(1+E)^6} + \frac{P_7}{(1+E)^7} + \frac{P_8}{(1+E)^8} + \frac{P_9}{(1+E)^9} + \frac{P_{10}}{(1+E)^{10}} + \dots$$

The value of an unplanted acre is equal to the remainder of:

$$\left[\frac{Y_1}{(1+E)^1} + \frac{Y_2}{(1+E)^2} + \frac{Y_3}{(1+E)^3} + \frac{Y_4}{(1+E)^4} + \frac{Y_5}{(1+E)^5} + \frac{Y_6}{(1+E)^6} + \frac{Y_7}{(1+E)^7} + \frac{Y_8}{(1+E)^8} + \frac{Y_9}{(1+E)^9} + \frac{Y_{10}}{(1+E)^{10}} + \dots \right] - \left[\frac{C_1}{(1+E)^1} + \frac{C_2}{(1+E)^2} + \frac{C_3}{(1+E)^3} + \frac{C_4}{(1+E)^4} + \frac{C_5}{(1+E)^5} \right]$$

The value of the total unplanted area is equal to the product of N multiplied by (value of unplanted acre).

The total value of the property is equal to the sum of the value of the total planted area plus the value of the total unplanted area.

It is assumed, of course, in the estimation of costs, and the consequent calculations of estimated annual profits, that the principles of good accountancy are followed.

The resultant value should be considered;

The maximum price which any man can pay, provided he considers the calculated interest rate as a minimum he would accept;

The minimum price or that which the owner can accept, provided he considers his future estimated income to be worth its capitalized value at the calculated interest rate as the minimum. In this connection, the writer begs to repeat from a previous paragraph, this memorandum: "It may often be possible to purchase considerably below this maximum valuation or it may be possible to sell considerably above these minimum values, but in each case, the negotiator should be very sure that he is doing so, rather than merely guessing that he is."

Should this memorandum have shown the need for, and the possibilities for, placing this work on a scientific and mathematically correct basis, the writer suggests that, for the sake of the industry, planters and investors in rubber-planting enterprises arrange to have the problem investigated by some one in whose judgment they have confidence, thereby discovering whatever faults in logic there may be in this suggested system, and evolving a better one.

Carton-Making in the Rubber Factory.

MODERN merchandising methods exact from manufacturers not only goods of proper and standard quality, but goods so packed that they can be conveniently stored and kept in good condition without deterioration until sold, and can then be delivered to the consumer in attractive form. Therefore, in place of bulk shipments, in bags, boxes, or barrels, many lines are shipped in cartons, big and little, of which millions are used in rubber goods production.

and a convenience to the customer in carrying home the purchase. To meet this modern requirement of the trade the progressive rubber manufacturer has added to his plant a complete paper-box factory, and few large plants are without them.

HOW CARTONS ARE MADE.

The making of a paste-board box is far from a simple operation, although machinery has been so perfected that many of the processes are practically automatic, while others are so simple

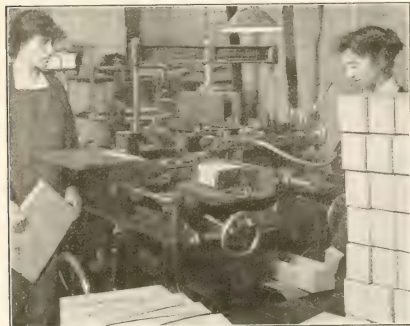


FIG. 1—AUTOMATIC CARTON-MAKING MACHINE.



FIG. 2—MACHINES FOR PAPER-COVERING CARTONS.

Take rubber shoes as an example. Years ago they were shipped in cases, the pairs simply tied together and packed in bulk. Today they are delivered in single-pair cartons, a boon to the retailer in placing the goods in stock, a saving of time in selling,

fied that no marked expertness is required. The stock, or box-board, for making cartons comes in sheets of the proper size to save any waste from trimming. The first operation is to score these sheets where they are to be bent, and to cut them apart, of

the shape and size to make up into single boxes. The working of the scoring and cutting-machine is interesting. A sheet is fed under the series of circular knives or scorers, and emerges with deeply indented lines where folds are needed. As soon as the

the staying material, sometimes cloth, but usually a tough paper especially made for this purpose from rope stock. This stock is cut just the right width to go around the corners, and is then attached to the back of the cover strip as it goes forward. The



FIG. 3.—MACHINES AND CONVEYOR BELTS FOR STAPLING CARTONS.

sheet has passed completely through, it automatically starts the mechanism that carries it at right angles through another series of scorers and cutters, the former completing the scoring, and the latter cutting the strips apart. These strips represent the two sides and bottom of a large single box or of two smaller boxes.

OLD AND NEW METHODS COMPARED.

The old-fashioned way of making a box was to make the ends, sides and bottoms of one piece, the flat shape resembling, to some extent, an exaggerated cross. Modern conservation, however, has resulted in eliminating the great waste of cutting out four square pieces the full height of the box by making the ends separate, and attaching them later to flanges on the larger part. Therefore, the strip which comes from the scorer and cutter is slightly wider than the length of the box, and is scored lengthwise with crosswise scorings where the sides bend up from the bottom.

These flat sheets are next taken to a corner-cutting and mitering machine, where miter-shaped triangles are cut out at the intersections of the scorings and the sheets thus made ready for the next operation. A machine takes these sheets, presses them so as to turn all the scorings, spreads adhesive on the turned flanges, and firmly attaches the box-ends, which are automatically fed from piles placed in the machine. Two girls keep the machine supplied with box-parts, and enable it to turn out thousands of boxes per day. These boxes, made of rough chip-board or mill-board, are to be covered with glazed paper, and here machinery has enabled greatly increased output and exact uniformity.

THE CORNER-STAYING PROCESS.

Naturally, the corners are the weak spots in such boxes, and corner-staying consists of pasting a strip of tough-fibered paper around each corner, or placing metal corners or inserting wire staples. The latest covering machinery, however, combines the corner-staying and the covering in one process. The boxes are placed, one at a time, on a form adjusted to fit the box. The glazed paper strip is fed from a roll, glue applied to its under side, and fed along, so that the paper may be properly "tempered" to prevent tearing, yet be of the right adhesive state to stick at once and smoothly. Meanwhile, from another roll, is applied



FIG. 4.—PRESS FOR CUTTING, SCORING, AND PRINTING CARTONS.

box, or cover, is on the revolving form ready to receive the strip which is cut off at just the right length to overlap the ends. In covering box-lids the operator runs her forefinger along in front of the paper to lay the flange of the cover flat upon the form.

THE TOPPING MACHINE.

Next comes a topping machine which cuts, pastes, and applies the glazed-paper top to the lids, thus giving them the required finish. The machine is so built and adjusted that the paper is stretched just the right amount and "tempered" to fit properly, lie smoothly and dry flat, giving the lids a finished appearance. Such are the manipulations through which a common paste-board box must pass. Besides these, it must be labeled. A label may be pasted on, or it may be printed on the end of the box itself, and for this latter purpose an adaptation of the common job-printing press has been evolved.

MAKING PRINTED CARTONS.

So much for boxes which are covered. Besides these there are thousands of cartons made of more flexible, but tougher, stock, having a finish that will take printing, and present a handsome appearance. This stock is fed into a scoring and printing press, which cuts out the cartons, scores them and prints the sides and the label on the ends. Each revolution of the press produces six cartons, delivered in the flat, scored for folding, which are then cut apart with shears. These cartons, being of lighter stock, are corner-stayed by means of machines which cut small lengths of wire from coils and insert them as staples, six being used on each carton, which then drops, finished, upon a conveyor belt, and is transported to the packing department.

A NEW RUBBER GOODS FACTORY IN BRAZIL.

According to consular reports, after the present war, a large American concern, holding a concession from the Government of Brazil, will build an important rubber goods factory in Rio de Janeiro.

NEW SWEDISH RUBBER FACTORY.

A new factory which will manufacture rubber goods is under way at Landskrona, Sweden. It is being erected by the Aktiebolaget Landskrona Gummifabrik.

Scientific Lighting in the Rubber Factory.

By A. L. Foxell, Edison Lamp Works of the General Electric Co.

THE importance of an efficient lighting system in the rubber factory cannot be overestimated. It is to the interest of the employer as well as the employee that the most up-to-date methods be adopted and that nothing be overlooked to provide the best facilities. The old-time carbon lamps are now as out of date as the kerosene lamps and open-burner jets which were used in the early days. Lighting has assumed almost as great an importance as the cost of labor and materials. It has been found that an actual increase of 15 per cent in output has followed the installation of a modern system equipped with the Mazda, or some other modern improvement of the old-fashioned carbon lamp. If the lighting is poor or inadequate, the workman will be less efficient. Good lighting is reflected in the faces of the operators, in the form of healthful, buoyant spirits. Bad lighting is irritating because it makes it difficult to see, and strain is involved in the efforts of workers to adapt themselves to unnatural conditions. Any plant manager knows that the experienced or trained man is an asset not easily replaced. He becomes incapacitated at the very time he should be yielding the biggest return on the investment made in training.

In line with the foregoing a scientific system for lighting a rubber shoe factory is outlined. Upon examination it will be evident that these suggestions also apply to nearly all lines of rubber manufacture. Thus, the lighting for the wash-room, mill-room and calender-room apply in all lines. So, too, in cutting, in making-up and in packing there are the same problems. In other words, the lighting plan designed for the rubber shoe factory is applicable with slight modifications to tires, clothing, druggists' sundries, mold work, specialties, in fact to all lines.

THE WASH-ROOM.

The band saw used to cut the crude rubber should be so clearly illuminated that there is no likelihood of accident. The writer encountered one case where a fairly high-powered lamp without reflector was placed about eye-level, close to the saw. This must have been most trying to the eyes of the workman and it was really good luck that he had not been seriously cut at some time. Everyone knows the blinding effect of a bright light source and with this lamp in close proximity to the saw, there must have been many occasions when the swiftly moving

material is handled in bulk and safety, really, is the determining factor. General illumination of a low intensity will be adequate, although, if feasible, units may be placed near the machines.

THE MILL-ROOM.

The mills are frequently arranged in rows along the sides of the room. If a row of outlets is located above them and lamps equipped with dome reflectors which give a fairly wide distribution of light, then the maximum light will be provided where most needed and the spread light will take care of the center of the room. A typical case might be such as shown in Figure 1. This room, 40 feet wide, has mills along the two sides on 10-foot centers; 75-watt Mazda lamps in RLM dome reflectors placed close to the 12-foot ceiling, spaced as indicated, will give excellent illumination. In cases where fairly uniform illumination is desired throughout the entire room, if modern, efficient equipment is employed, a suitable intensity will be obtained when one-quarter to one-half-watt per square foot of floor area is used.

COMPOUNDING-ROOM.

The room devoted to this work should be fairly well illuminated by the general system, allowing at least $\frac{1}{2}$ -watt per square foot of floor area. Good lighting here will prevent errors in the mixture and be a paying investment.

COATING AND CALENDERING.

As the material passes over these machines, it must be watched for defects and care must be taken to see that the coat-

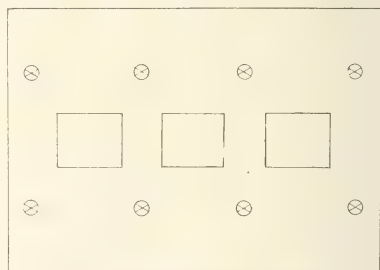


FIG. 2—TYPICAL LAYOUT FOR CALENDERS.

⊗=200-WATT MAZDA C LAMP IN RLM STANDARD DOME REFLECTOR.

ing is being applied in the correct manner. Good lighting will make this work easier and more certain as to results. If machines should be located as indicated in Figure 2, which is typical of some conditions, then a general lighting system as shown in the plan will give good illumination on both ends of the machine and at the same time illuminate the entire area in a most satisfactory manner. This particular arrangement assumes the use of 200-watt Mazda C lamps in RLM standard dome reflectors on centers approximately 20 by 20, placed as close to the ceiling as practicable. If the room is not so arranged or there is a multiplicity of shafts, belts and the like, precluding the use of general illumination, then lighting outlets should be located at the ends of the machines. If the lamps are equipped with angle type reflectors, they will give the maximum illumination on the vertical surface or in other words on the material as it passes over the rolls.

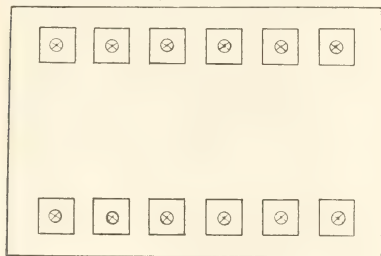


FIG. 1—TYPICAL MILL-ROOM LAYOUT.

⊗=200-WATT MAZDA C LAMP IN RLM STANDARD DOME REFLECTOR.

blade was indistinct, if not totally invisible. Such conditions must be watched and avoided.

In washing there are no close demands on vision. It is merely necessary to provide sufficient light to load the crude rubber in the mills and make occasional adjustments. The ma-

SOLE-ROLLING MACHINES.

The center portion of most of these machines extends practically to the ceiling and a symmetric arrangement of outlets would probably cause bad shadows. It is, therefore, desirable to have outlets at both the front and rear of the machine approximately as indicated in Figure 3. Relatively small lamps can be used with deep bowl reflectors to direct the light on the work. Such an arrangement will enable the operators to make adjustments with facility and gage or inspect the stock accurately.

SOLE CUTTING.

The operators on this process are working rapidly with sharp knives and if the artificial light is of a character that is not well suited, the danger of cutting one's self is increased. It is well, therefore, to supply a fairly high intensity of evenly distributed light from units equipped with proper reflectors to shield the eye and hung well out of angle of view. The scheme pictured in Figure 4 will prove entirely satisfactory. It will be

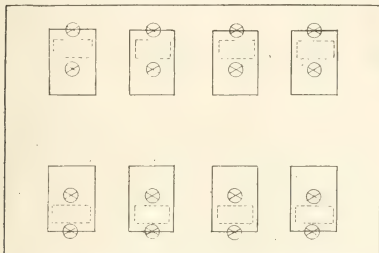


FIG. 3—TYPICAL LAYOUT FOR SOLE-ROLLING MACHINES.

⊗=25 OR 40-WATT MAZDA LAMP WITH DEEP BOWL REFLECTOR. noted that this gives the maximum illumination at the ends of the boards or tables where the workmen stand and yet does not confine the bright illumination to a small circle, which is quite trying to the eyes. A row of the same units on slightly wider spacings is suggested for the center of the room. These would give good general illumination when the tables were not in use. All the lamps should be hung as close to the ceiling as

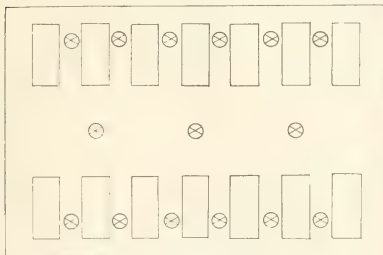


FIG. 4—TYPICAL SOLE-CUTTING-ROOM LAYOUT.

⊗=75-WATT MAZDA C LAMP IN RLM STANDARD DOME REFLECTOR.

possible. This is assuming that ceilings in general do not run over 12 or 14 feet in height.

CUTTING LININGS.

It would seem to be a rather difficult matter to get sufficient light beneath the head of the presses from an overhead unit,

but experience has shown that a moderate intensity of well diffused general illumination meets the conditions in an excellent manner. A typical case is pictured in the night photograph Figure 5. No drop lamps are used, but 100-watt Mazda C



FIG. 5—TYPICAL OVERHEAD ILLUMINATION OF PRESSES, ELIMINATING SHADOWS.

lamps in dome type steel reflectors are used on 12-foot centers close to the ceiling. Absence of drop cords makes a neater appearing shop.

UPPER CUTTING.

A high intensity of general illumination is advisable in this part of the plant. Work is done with sharp knives and must be cut accurately to line. It is advisable to supply approximately 1 to 1½ watts per square foot of floor area. A splendid example of the application of this method of lighting is given in the night photograph, Figure 6. Every board and bench is clearly



FIG. 6—TYPICAL OVERHEAD ILLUMINATION OF UPPER-CUTTING ROOM, ELIMINATING SHADOWS.

visible and there are no annoying shadows or bright light sources hung low to fatigue the eye.

MAKING-UP ROOM.

Here also the high intensity general lighting system should be applied. This is far more desirable than the system used in many instances of drop lamps hanging close to the racks. A typical layout might be such as that shown in Figure 7. This implies the use of 100-watt Mazda C lamps in dome reflectors on approximately 10-foot centers. In lighting work of this character it is essential to supply an intensity so that the most diffi-

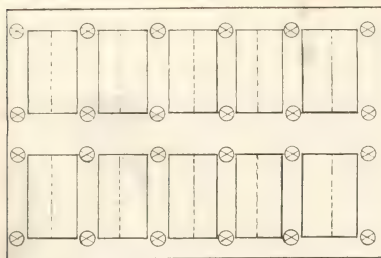


FIG. 7—TYPICAL LAYOUT MAKING-UP ROOM.

⊙—100-WATT MAZDA C LAMP IN RLM STANDARD DOME REFLECTOR.

cult operation can be performed with ease. Skiving is no doubt the step of manufacture which falls under this classification and with a scheme such as outlined, it can be readily accomplished.

VARNISHING AND VULCANIZING.

Here again the work is more or less handled in bulk although it is practically a finished product. There are no demands for close vision and a low intensity of general illumination will suffice. This can be supplied with 200-watt lamps on 20-foot centers if the ceiling is high, or 100-watt lamps on 14-foot centers or 75-watt lamps on 11-foot centers in the case of a low ceiling.

INSPECTING AND PACKING.

To prevent defective material getting in the hands of the customer, it is well to have this room brightly lighted so that all imperfections are clearly discernible. The high intensity of general illumination from 100-watt lamps on approximately 10-foot centers is essential. Where piles of material extend close to the ceiling, outlets should be located with reference to these so that bad shadows are eliminated.

Analysis of Antimony Pentasulphide.

By D. Repony.

AFTER having tried to analyze antimony pentasulphide, following the known methods, in no case could perfect results be obtained. Either the method required too much work or was not in accordance with the need of the rubber manufacturer. By most methods the main object is to determine the total antimony content. It is, however, altogether wrong to value the antimony pentasulphide by high content of antimony, the essential thing being that the product should show a high percentage of antimony pentasulphide.

Commercial antimony pentasulphide is produced by treating the mineral stibnite with sulphur and lime, obtaining calcium thioantimonate, which is decomposed by sulphuric acid into antimony pentasulphide and calcium sulphate. After the antimony compound is washed with water to remove the free acid and some of the water-soluble calcium sulphate, a large quantity of calcium sulphate still remains with the product. When, however, caustic soda is used in the reaction instead of lime, the antimony obtained is free from calcium sulphate, providing the product has been thoroughly washed. Thus the presence of calcium sulphate must not be considered as an adulterant but as a by-product of the reaction. The writer has found, also, all kinds of adulterants admixed with the antimony. The adulterants are mostly red oxide of iron and iron silicates, such as red clay, whiting and barytes. Therefore, to analyze for adulterants is considered very essential.

Before any attempt is made to analyze antimony submitted for rubber compounding it should be tried practically in some of the most important rubber compounds, replacing the same quantity of satisfactory lots previously used, and the rubber compound be subjected to a series of different heats of vulcanization. Should the rubber compound not change color during the vulcanization at 310 degrees F., it is probable that the antimony will show satisfactorily on aging. Should the color change on vulcanization at the above temperature and also at lower heat, further consideration will depend very much upon the price quoted and the quality of the rubber goods in which it is to be used. In cheap compounds generally the same shade of red which is obtainable by poor antimony can be readily duplicated with red oxide of iron. Should the antimony show satisfactorily in rubber compound under the heat of vulcanization, the next thing is to prove that it contains some adulterant.

TEST FOR ADULTERANTS.

Take about five grams of the sample in 100 cc. of ten per cent hot caustic soda solution, and stir with a glass rod on a steam

bath till no red particles can be observed; this usually requires ten minutes. Pure antimony should dissolve completely. Any red powdery residue indicates an adulterant, such as red oxide of iron or iron silicates. A white residue indicates, in most cases, calcium sulphate, which can be readily confirmed. If the residue is not soluble in cold water it is antimony tetroxide, whiting, barytes, silica, etc.

The method described below for the analysis of antimony pentasulphide yields satisfactory results from the point of view of the rubber manufacturer, and affords the analyst partial information with the least work, or, where time and facilities are available, the complete analysis may be effected.

METHOD FOR COMPLETE ANALYSIS OF ANTIMONY PENTASULPHIDE.

The antimony should be neutral and about 420 specific gravity. The crimson antimonies are mostly of slightly acid reaction. However, the acid content must be in any case not higher than 1/100 of one per cent. The acidity is determined qualitatively by wetting a little of the sample with water and testing it with litmus paper. The quantitative amount of the acid contained in the sample should be determined in the following manner: Take two grams of the sample, place it in filter, and wash it with water till the washing water is neutral; then titrate the obtained solution with 1/10 normal caustic soda, using phenolphthalein as indicator. Antimony containing more than 1/100 of one per cent of free acid should be rejected, as this is apt to cause blisters during vulcanization, especially in such rubber compounds as contain carbonates. Crimson antimony very seldom contains free sulphur. The amount of free sulphur in orange antimony ranges from none up to 30 per cent, the usual amount being between 15 and 20 per cent.

To determine free sulphur place five grams of the sample in a thimble of filter paper in such manner that the solvent during extraction cannot splash out any of the antimony. Fresh redistilled carbon disulphide must be used as solvent, and the extraction be continued for ten hours; this should be done over night.

The following precautions should be noted. Carbon disulphide when not freshly distilled usually contains much free sulphur, and if used in extracting will lead to false results in the analysis. Also carbon disulphide readily decomposes under the influence of light, especially during boiling. The writer has observed that this result during day-time extraction is variable,

while in night extraction it is very constant. For example, crimson antimony which has shown perfectly free from free sulphur during night-time extraction with fresh redistilled carbon disulphide, gave during day extraction a variable result as high as four per cent. Following the night extraction the carbon disulphide is evaporated to dryness and the residue of free sulphur considered as the correct amount from the antimony present. The extracted sample is dried for about one hour at 60 degrees C., weighed and preserved for further analysis.

DETERMINATION OF MOISTURE AND WATER OF CRYSTALLIZATION.

The moisture in antimony is usually very small in amount although the water of crystallization present may run as high as 15 per cent. The amount of water of crystallization is always in proportion to the content of calcium sulphate. The water of crystallization is not readily volatilized, requiring at least six hours at 100 degrees C. to expel it completely if a vacuum is not used. To avoid volatilization of free sulphur it is better to use the sample which obtained from the free sulphur extraction. For example, if from five grams one gram of free sulphur has been extracted, and the antimony weighs 3.90, take .78 which is equal to one gram of the original substance, place it on a weighed watch glass, spreading the sample over a large area, and dry it at 100 degrees C. to constant weight. If the resulting weight is .74, then the moisture and water of crystallization is six per cent.

DETERMINATION OF CALCIUM SULPHATE, ADULTERANTS, AND ANTIMONY OF OTHER COMBINATION THAN ANTIMONY PENTASULPHIDE.

It is seldom that the antimony contains a number of different substances in the same sample, therefore a qualitative test may be omitted and quantitative analysis proceeded with. Since calcium sulphate is the material most frequently to be determined, and the work requires much time, it is a good plan to shake a small amount of the original sample with water, filter off the solution, and test with barium chloride solution. If no precipitate is obtained the antimony is ready for further investigation; otherwise proceed as follows:

Take the equivalent of one gram of the sample which has resulted from the free sulphur determination, place it on filter paper, wet it with a small quantity of alcohol and wash it with cold water. Use a glass funnel with a cock so that the wash water passes through very slowly allowing enough time to act upon the calcium sulphate. After about 200 cc. of water has been used, occasionally test with barium chloride solution a few drops of the wash water dropping from the funnel and proceed with the washing till the water-soluble calcium sulphate has passed completely into solution. Transfer the total wash water to a weighed beaker, evaporate it to dryness on steam bath, and dry it at 100 degrees C. to constant weight. This residue represents calcium sulphate.

After extraction of the calcium sulphate, the antimony is washed through a small hole in the bottom of the filter paper into a beaker. Allow it to settle, pour off the clear water and treat the antimony with approximately 100 cc. ten per cent caustic soda solution, stirring it for about 10 minutes on steam bath. If the antimony passes completely into solution, further analysis in this group is not required. If any residue is left, it may represent a complex mixture of adulterants, but in most cases it represents only a single substance.

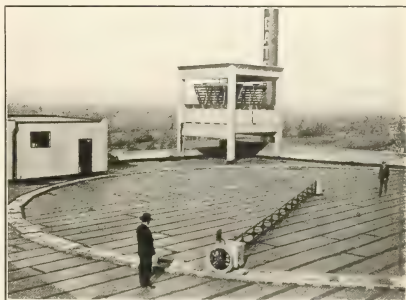
Allow the residue to settle, pour off the clear solution, stir again with about 50 cc. water, transfer to filter, and wash with water till the reaction is neutral. Through a small hole in the bottom of the filter paper wash the residue completely down with water into a weighed beaker. Allow residue to settle, pour off the clear water, and evaporate the remaining water and residue to dryness, and dry to constant weight. This residue represents the amount of total adulterant of antimony tetra-

oxide. Red color of residue indicates red oxide of iron or iron silicates, which are the most frequently used adulterants. A white residue indicates barytes, antimony tetraoxide, whiting or magnesium carbonate, or silicates. To learn the true composition of the residue, test it qualitatively in the usual way.

In the whole course of analysis never use a platinum crucible as there is danger of mistaking the antimony tetraoxide for barytes or some other mineral filler and when the antimony tetraoxide is ignited with filter paper in platinum some of the antimony becomes reduced and will alloy with the platinum.

TIRE-TESTING SPEEDWAY.

A mile-high speedway, and the only one in the world for testing half-soled tires is that of the Gates Rubber Co. on one of their large factory buildings in Denver, Colorado. The machine consists of a long arm revolving in a huge circle, on the end



GATES' TIRE-TESTING TRACK.

of which is attached the tire. A weight equivalent to that of a heavily-loaded tire is suspended in such a way that the tire itself carries the load. The tire travels on a half-mile track, which is first a stretch of cement trackway on which it attains a speed of 35 miles an hour. It then strikes a sandy stretch which causes it to jump and skid. Then it traverses an imitation brick roadway, following which it plunges into water and mud. By way of variety an incline representing a rough mountain road is included with a 45 per cent slope. Thus, the tire continues its journey all day and every day until it has given the maximum amount of mileage. By this means, if defects exist they are discovered, and promptly remedied.

MORGAN & WRIGHT GET LARGE SHIPMENT OF RUBBER.

What is said to be one of the largest single-lot shipments of rubber ever received in America was recently landed at San Francisco by the S. S. *Siberia Maru* from Singapore and transferred to a train of 26 cars for shipment overland to Morgan & Wright, Detroit, Michigan. The shipment weighed 2,240,000 pounds and represents a portion of the accumulated crude rubber held in the Far East by the war-time embargo on importations of this material.

TIRES TO BE MADE IN SIZES NEEDED.

The National Automobile Chamber of Commerce, New York City, states, under date of March 21, 1919, that pneumatic tires of all sizes will be available for cars and rims already made or to be made, and that the manufacturers will not discontinue any particular size on a fixed date, as was at first anticipated. The sizes of the rims and tires in actual use or to be built will govern tire production.

What the Rubber Chemists Are Doing.

NATURE OF THE VULCANIZATION PROCESS.¹

THE following observations are condensed from the remarks of Dr. G. Van Irterson on the nature of the vulcanization process.

The investigations of the Institute were made primarily for technical purposes, but offer an opportunity for some theoretical considerations. In what follows, the results of others are taken into account but the object is not completeness in every direction.

1. A theory on the nature of the *hot vulcanization process*—and it is that with which I intend to deal exclusively—will have to reckon with the following established facts:

a. The process proceeds additively, and formation of sulphureted hydrogen is subordinate.

b. Sulphur is transferred into the so-called "combined" state. It is then practically insoluble in the usual solvents.

c. The "binding" may practically be deemed "complete," the opinion that part of the sulphur remains uncombined as "free" sulphur having been refuted.²

d. Very small quantities of combined sulphur make an important change in the properties of considerable quantities of rubber. Rubber with one per cent combined rubber is entirely different from a non-vulcanized rubber-sulphur with one per cent sulphur. The usual solvents do not dissolve non-vulcanized rubber from the vulcanized.

e. The change in the properties of rubber during vulcanization is perfectly continuous. Change of mechanical properties varies with the amount of sulphur being taken up. No boundaries can be delineated between prevulcanization, undervulcanization and overvulcanization.³

f. The velocity of combining has a coefficient of temperature between two and three.⁴ The binding of sulphur begins much below the ordinary vulcanization temperatures.⁵

g. The velocity of combining of sulphur varies considerably for different varieties of rubber under equal conditions of temperature, mixing, molding, etc.⁶

h. The velocity of vulcanization is strongly influenced by some inorganic and organic compounds. This influence, especially that of some organic compounds, is entirely catalytic.⁷ Acids act retardingly, alkalis in weak concentrations, acceleratingly.⁸

i. First latex plantation rubbers on being vulcanized under constant conditions produce mechanical properties which strongly correlate with the vulcanization coefficients.⁹ With accelerated vulcanization, by catalyst or by excess of sulphur, or under greatly deviating conditions, this correlation ceases.¹⁰

j. Powerful mechanical treatment of the raw rubber changes the mechanical properties of the vulcanized product, but not the velocity of vulcanization.¹¹

2. There is no agreement as to what is the maximum quantity of sulphur which can be combined during vulcanization. A review of the results of various investigators leads the author to

conclude that 32 per cent is probably not the maximum of sulphur which can be "combined" with caoutchouc, meaning such sulphur as cannot be extracted with the ordinary extraction liquids and under circumstances whereby all sulphur is removed from a non-vulcanized rubber-sulphur mixture.

3. An unsettled problem is that of the reversibility of the vulcanization process. The fact ascertained by Spence and Young, *l. c.*, that no free sulphur is extracted from a mixture with ten per cent of sulphur having previously been vulcanized for a long time, even when extracting for 48 hours, is a strong indication that there is no question of a reversibility by ordinary extraction. Bary and Weyndert¹² think themselves justified in concluding the reversibility from the fact ascertained by them, that sulphur can be extracted from vulcanized rubber, previously deprived by extraction of free sulphur and then heated in a carbon dioxide atmosphere. Unpublished experiments carried out at the Institute make it evident that on heating vulcanized rubber free from uncombined sulphur, a very important regeneration occurs, characterized by the product becoming plastic without sulphur being transformed from the combined into the free state. On further continued heating a part of the rubber is transformed into the soluble form and through this, part of the sulphur becomes "soluble."

4. It has not been certainly determined whether the combined sulphur takes the place of the bromine during bromination of vulcanized rubber.

5. Opinion is not settled as to the course of the combining of sulphur with the hot vulcanization.

Fol and Van Heurn found the following vulcanization coefficients after vulcanizing at 50 pounds with varying quantities of sulphur.

Sulphur, (parts S on 100 parts rubber)	Vulcanization Coefficient.
2.57	1.08
5.27	2.38
8.13	3.01
11.51	4.06
14.30	6.85
17.70	7.68
21.20	8.32
25.00	9.66

Considering that about half the added sulphur was combined at the close of the vulcanization in the above table, it appears that for mixtures of 20 parts sulphur and less there is approximate proportionality between the vulcanization coefficient and the quantity of added sulphur.

6. Judging about the course of the combining of the sulphur, one has to take into consideration that at the temperatures of vulcanization in use in factories, only a limited quantity of free sulphur is being taken up by the rubber. Skellon has shown that at about 130 degrees C. ten per cent free sulphur can be taken up very rapidly in non-vulcanized rubber, by diffusion or adsorption.

7. For the explanation of a rectilinear course of the curve representing the binding of sulphur with the duration of the vulcanizing process one encounters difficulties when a rectilinear course is assumed for all sulphur binding lines. In that case a different rectilinear course will have to be explained for different additions of sulphur. Now the straight line points to an independence of the velocity of binding of the concentration of the free sulphur, while the different direction of straight lines would show precisely the dependence on increasing additions of sulphur. It is very probable that the rectilinear course with ten parts of sulphur and the doubly bent course with higher sulphur concentrations, must be attributed to the same cause, namely, an auto-catalytical acceleration of the process. In order to ex-

¹Communications of the Netherland Government Institute for Advising the Rubber Trade and the Rubber Industry," Part VII, page 239.

²Spence and Young, "Kolloid-Zeitschrift," 1912, page 28, and 1913, page 265. Skellon, "The Rubber Industry," London, 1914, page 172.

³Part VI, page 216.

⁴Daurin, "The India-Rubber Journal," 1913, page 120; Spence and Young, *l. c.*; and Fol and Van Heurn, Part VI, page 187.

⁵Hirnschier and Kindscher, "Kolloid-Zeitschrift," 1911, page 245.

⁶Part V, page 145.

⁷Stevens, "Kolloid-Zeitschrift," 1914, page 91; Gottlob, "Gummi-Zeitung," 1916, page 307; and Part VI, chapter 40.

⁸Martin, "The Rubber Industry," 1914, page 205.

⁹Part V, chapter 40.

¹⁰Part VI, chapter 60.

¹¹Spence and Ward, "Kolloid-Zeitschrift," 1912, page 274; and Part VI, page 181.

¹²"Comptes Rendus," 1911, page 676.

plain the curved course of the binding of sulphur the supposition could be made that the accelerating action diminishes on continued vulcanization, but it seems more plausible that the catalytic acceleration surpasses by far the auto-catalytic one (here $7\frac{1}{2}$ per cent of sulphur), the latter, therefore, acting only very slightly on the process.

In the remainder of his paper the author elaborates two working hypotheses on the vulcanization process. His suppositions are as follows:

First. That mentioned originally by Bernstein¹² as a possibility. According to that conception, the colloidal sulphur formed on heating the sulphur solution, would unite to one complex with the considerably depolymerized rubber during the vulcanization. This complex would be insoluble in the ordinary solvents for rubber.

Second. That an "active" sulphur modification exists and that it combines chemically with a part of the rubber to a compound insoluble in the usual solvents, and that the latter afterwards combines "colloidally" with the remainder of the rubber to an insoluble complex.

For the author's development of these hypotheses the reader must be referred to the original paper.

SOME PROBLEMS OF THE PLANTATION RUBBER INDUSTRY.

The relative advantages of the various methods for coagulating rubber latex employed in the plantation rubber industry are discussed by H. P. Stevens under the above title in the "Journal of the Society of Chemical Industry," June 29, 1918, page 237r.

The coagulation of latex was studied in Ceylon by Parkin who recommended the use of acetic acid. His choice of an organic acid in preference to a mineral acid was fortunate, but he considerably overestimated the proportions of acid necessary for coagulation. At this time some estates, for fear of using too much acid, were doing without acid altogether and relying on the so-called natural coagulation. This method of "natural" or spontaneous coagulation yields a satisfactory product, but at that time it was neither economical nor convenient. More recently, the method of spontaneous coagulation has been revised and modified by allowing the coagulation to be carried out under anaerobic conditions. It is known that when latex is coagulated spontaneously and exposed to the air the interior of the mass acquires an acid reaction brought about by lactic acid fermentation, while the surface develops a yellowish alkaline slime in which coagulation is very imperfect.

According to the most recent work, carbon dioxide gas given off from the mass is retained on the surface in the anaerobic process, and this prevents the putrefactive changes which give rise to the alkaline slime. The evidence at present appears to be in favor of an enzyme action as the primary cause of coagulation, although sufficient lactic acid soon develops to bring about coagulation in the ordinary manner. If the anaerobic process can be relied on to produce regular and complete coagulation within twenty-four hours, the process has a future and should eventually displace coagulation by acetic acid, at any rate for bulk coagulation in the manufacture of crepe rubber.

The author's original studies showed that rapid and complete coagulation could be obtained with a very small proportion of acetic acid—about one part per thousand of diluted latex. The coagulation was clear and the resulting rubber pale and more even in appearance than that produced by spontaneous coagulation. With the same end in view, small quantities such as one to two parts per 1,000 of sodium bisulphite are commonly added to the latex which inhibits the action of the oxydase present. This would otherwise produce a darkening of the surface of the coagulum, and eventually dark streaks or patches in the finished rubber. The bisulphite has without appreciable effect on the quality of the rubber, but it is questionable whether a pale, even-colored

rubber is the best that can be produced, whatever method be adopted to prevent the darkening. This pale rubber cures more slowly than a darker and less attractive-looking material which has been prepared by setting the coagulum aside for a few days to putrefy before making and creping. The putrefactive bases so formed accelerate vulcanization.

It is often stated that rapid-curing rubber is of better quality than the pale-colored product. To produce the technical effect of vulcanization it is necessary to heat the mixture of rubber and compounding ingredients, and it is argued that the heating detracts from the beneficial effect of vulcanization. The argument is based on the known fact that heating rubber by itself to vulcanizing temperature damages it. If this is so, the shorter period of heating the better the product, provided an equal degree of vulcanization is produced. There is some evidence of a general nature to support this view, but conclusive experiments to this end have not been published.

Similar considerations may be applied to organic accelerators added to the rubber in the course of manufacture. One authority goes so far as to state that a good accelerating agent must not only facilitate vulcanization but should also toughen rubber and render it immune from deterioration.

Variation in rate of cure of *Hevea* rubbers must certainly be ascribed to a variation in the nature and proportion of the non-caoutchouc ingredients. The insoluble nitrogenous matter commonly referred to as the protein matter facilitates the combination of the rubber and sulphur, as is shown by the effect of its removal from the rubber. On the other hand, the putrefactive bases are far more active. It has been suggested that the fresh latex contains a substance having an accelerating action, presumably in addition to the insoluble nitrogenous matter and the putrefactive bases. It has not, however, been isolated, and nothing is known of its composition.

The ever-increasing supplies of plantation rubber have rendered the collection and marketing of the inferior grades of wild rubber unprofitable, but the supplies of fine *Para* have not diminished, and this rubber has for years commanded a premium over the best plantation grades. This is the more remarkable as the former requires to be first washed and dried, in which process it loses about 20 per cent of its weight. Standard plantation, on the other hand, can be used for the majority of purposes without preliminary treatment. Those who have made comparative vulcanizing tests agree that fine *Para* does not give a stronger vulcanized product than plantation, nor does it vulcanize very rapidly. It is claimed that fine *Para* is less variable than plantation, but this is open to question if fine *Para* be compared with regular consignments of any of the best marks of plantation. It is also admitted that fine *Para* shows some variation.

The explanation for the preference given to fine *Para* is probably to be found in hesitation on the part of manufacturers to employ plantation rubber for purposes where the cost of the rubber is a relatively small item in comparison with the value of the product, as, for example, in the case of a submarine cable, on the lasting qualities of which no chances can be taken.

AZO PROCESS ZINC OXIDES.

Lead-free zinc oxide is essential in the production of clear white rubber goods although the presence of small percentages of lead oxide is not objectionable in zinc oxide for rubber work where color is not important.

An American company has perfected a new process which accomplishes results previously considered impossible in the manufacture of zinc oxide. By this process zinc oxide of exceptional purity and physical properties is uniformly obtained. Manufacturing facilities have recently been extended to permit these lead-free and low-leaded oxides to be offered to the rubber trade.

¹²"Kolloid Zeitschrift," 1913, page 273

ESTIMATION OF RESIN AND IMPURITY IN BALATA AND GUTTA PERCHA.

Notes on the estimation of resin and impurity in balata and gutta percha by F. Dekker are abstracted as follows by the "Journal of the Society of Chemical Industry," volume 37, 341A:

Acetone is the most trustworthy solvent for the extraction of balata and gutta percha. Ether dissolves a part of the gutta or balata and so gives high results, while with alcohol the gutta becomes plastic on account of the higher boiling point of the solvent, and the extraction is thereby rendered incomplete. When balata is extracted with alcohol a portion of the material insoluble in xylene passes into solution and is included with the resinous matter.

DEPOLYMERIZATION OF RAW RUBBER.

The depolymerization of raw rubber is reported by A. Van Rossem is outlined in abstract as follows by the "Journal of the Society of Chemical Industry," volume 37, 341A:

When rubber is heated for six hours at 130 degrees C. in a sealed glass tube containing air, it melts to a brown syrup, whereas this change is not observed in a vacuum or in hydrogen, nitrogen, or carbon dioxide. With one per cent rubber solutions in xylene, oxidation does not set in until after several hours, commencing first when a certain limit of relative viscosity has been passed. Depolymerization occurs much more rapidly in the presence of oxygen than in that of other gases, oxygen appearing to exert a catalytic effect; the rate of depolymerization depends also on the nature of the solution.

CHEMICAL AND MECHANICAL-TECHNICAL EXAMINATION OF RUBBER.

The following abstract from the "Journal of the Society of Chemical Industry," volume 37, 341A, summarizes a contribution by J. G. Fol:

In order to form a correct judgment on the quality of rubber it is necessary, in addition to making chemical analysis and vulcanization tests, to ascertain whether the various original constituents of the rubber and any substances which have been subsequently incorporated in it, remain in the same relative proportions and can be rediscovered by chemical analysis. Preliminary experiments have led to the following conclusions:—the resin content remains practically constant throughout the various operations, although a slight decrease may sometimes be observed after vulcanization. The proportion of insoluble constituents is decreased by mechanical working. The protein matter is not quantitatively precipitated by the petroleum method applied for the separation of insoluble substances. When free sulphur is present to the extent of several units per cent, it cannot be oxidized quantitatively by nitric acid. The estimation of fillers by boiling with petroleum yielded low results with the mixture investigated (rubber 50, zinc oxide 62, magnesia 13, sulphur 5), as also did the determination of the ash. The viscosity of the rubber is diminished by mechanical working on the washing rolls, and still more by working on hot rolls; this is attributed to a reduction in the molecular complexity. The indirect method for the estimation of rubber in a vulcanized product gives results which deviate several units per cent from the quantity of rubber actually used.

YARN TWIST-TESTER.

Tests can be made on samples from one inch to 20 inches in length with the latest type twist-tester for yarns. The tension of thread between clamps is always the same, being regulated with small weights. As the yarn is unwound, one turn of the handle loosens ten turns of twist, the left-hand clamp is drawn to the left by small weights holding the yarn taut, and at the same time the take-up is registered on a special scale. The take-up, especially on hard-twisted yarns, is a very important factor in determining the size of the single yarn used in making the ply yarn. The spinning twist can be accurately determined by means of a magnifying glass through which the operator can watch the fibers unwind. A similar apparatus for yarn twist testing is also made by Goodbrand & Co., 19 Victoria street, Manchester, England. (Alfred Suter, 200 Fifth avenue, New York City.)

CHEMICAL PATENTS.

THE UNITED STATES.

PROCESS OF TREATING RUBBER WASTE.—The process consists of subjecting waste rubber containing cotton to the action of a reclaiming solution consisting of approximately two per cent by weight of sodium hydroxide, and also containing kerosene and resin in the approximate proportions of five pounds of resin and 15 pounds of kerosene to 100 pounds of waste rubber, maintaining the temperature of the reclaiming solution at about 300 degrees F., and agitating the solution and rubber waste. (John F. Johnston, Barberton, assignor to The Electric Rubber Reclaiming Co., Akron, both in Ohio. United States patent No. 1,291,535.)

COTTON CONTAINING RUBBER COMPOSITION.—A product prepared from rubber waste containing cotton and comprising reclaimed rubber containing substantially uniformly distributed cotton fiber which has been subjected to the action of a caustic alkali reclaimed from the cotton in the waste rubber. (John F. Johnston, Barberton, assignor to The Electric Rubber Reclaiming Co., Akron, both in Ohio. United States patent No. 1,291,536.)

PROCESS FOR VULCANIZING RUBBER AND PRODUCTS.—A process for treating rubber or similar material which comprises subjecting the rubber to beta-dinitroanthraquinone. (Willis A. Gibbon, Flushing, assignor to New York Belting & Packing Co., New York City—both in New York. United States patent No. 1,291,828.)

ADHESIVE MATERIAL.—An adhesive composition for uniting fabric surfaces, consisting of a dextrin, water, and castor oil held in emulsified condition. (Alfred E. Jury, New York City, assignor to National India Rubber Co., Bristol, Rhode Island. United States patent No. 1,292,333.)

THE DOMINION OF CANADA.

RUBBER COAGULUM.—The process of treating latex or similar material, which comprises subjecting the mass to an hydroxy derivative of a polycyclic member of the benzene series, forming a substance adapted to prevent slime formation and combining a vulcanizing agent with the mass. (The Canadian Consolidated Rubber Co., Limited, Montreal, Quebec, Canada, assignee of Edward Mark Slocum, Medan, Deli, Sumatra, Dutch East Indies. Canadian patent No. 188,135.)

RUBBER COAGULUM.—The process of treating a mass of rubber coagulum or similar substance containing a protein and water, by applying to the mass an alcoholic solution of beta-naphthol, forming on the surface of the mass a semi-permeable membrane of water-insoluble compound of protein and beta-naphthol adapted to prevent passage of colloidal nitrogenous or similar material, and combining a vulcanizing agent with the mass. (The Canadian Consolidated Rubber Co., Limited, Montreal, Quebec, Canada, assignee of Edward Mark Slocum, Medan, Deli, Sumatra, Dutch East Indies. Canadian patent No. 188,136.)

LATEX PRODUCT.—A compound rubber mass produced by vacuum evaporation, containing an insolubilized nitrogenous compound comprising a substance of the benzene series. (The Canadian Consolidated Rubber Co., Limited, Montreal, Quebec, Canada, assignee of Edward Mark Slocum, Medan, Deli, Sumatra, Dutch East Indies. Canadian patent No. 188,137.)

BRAKE LINING.—A brake lining consisting of a body of fibrous material impregnated with the product of the vulcanization of asphalt, red lead, and sulphur. (The Thermoid Rubber Co., assignee of William Dolton Pardoe—both of Trenton, New Jersey. Canadian patent No. 188,392.)

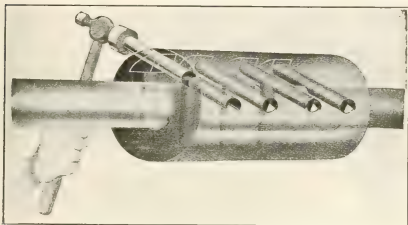
TIRE FILLER.—A composition of ingredients substantially in the following proportions: soya bean oil, 24 pounds; chloride of sulphur, six pounds; oxide of magnesia, 17½ ounces, and Venetian red, three ounces. (The Universal Tire Filler Co., assignee of Frank A. Hager, both of Portland, Oregon. Canadian patent No. 188,448.)

New Machines and Appliances.

A SIMPLE AND EFFICIENT LINE-SHAFT COUPLING.

A LINE-shaft coupling that is simple yet strong in construction—that will not slip when installed and one that can be applied by means of only a hammer, is shown in the accompanying illustration. It is of the rigid type and obviates the trouble of slipping due to friction grip couplings or poorly fitted keyed couplings.

This coupling is easy to install by inserting the end of each shaft into the bore of the coupling, and hammering the cupped-

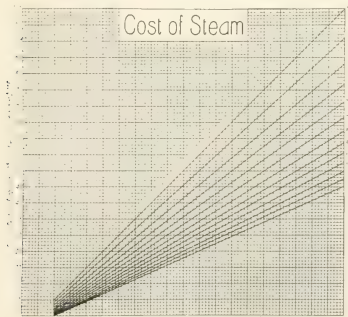


THE PINTITE RIGID COUPLING.

end pins into place. These tempered tool steel pins cut their own seats in the shafts. They also wedge the shafts into the recess provided in the opposite side of the coupling, and so a very powerful driving grip is obtained. (Smith-Serrel Co., Inc., 90 West street, New York.)

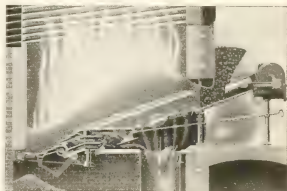
COST OF STEAM REDUCED BY UNDERFEED STOKER.

The accompanying diagram furnishes the power-plant operator accurate information on the cost of coal for generating steam. Knowing the price, the amount of coal burned, and the quantity of water evaporated, the solution is easy. Start with the cost of coal per ton and project vertically, intersecting the oblique line corresponding to the evaporation being obtained from the boilers from and at 212 degrees F., then move horizontally to the left margin, where the cost of coal to evaporate one thousand pounds of water from and at 212 degrees F. is



given. The chart can also be used to determine the evaporation required to generate steam at a certain cost, by reversing the above process.

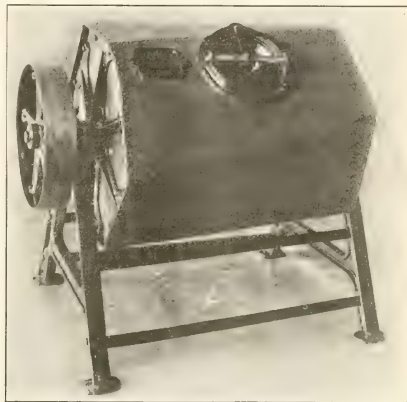
This chart should awaken interest in the relative efficiency of a mechanical stoker as compared with hand firing. The stoker shown in the illustration is the underfeed type in which air is forced into the fuel bed by a fan. A series of corrugated tuyeres, overlapping one another, form ribs extending from the hopper on the outside of the furnace to the center of the bed. These rows of tuyeres are inclined and separate the retorts that carry the coal from the hopper to the bed. They rest on air-boxes connected with the main air-shaft. The forced draft enters these boxes and distributes itself to the burning coal through these multiple-openings in the tuyeres. In other words, the entire furnace bed is fed continuously and evenly with thousands of minute jets of air, which means perfect combustion of the coal and little or no smoke. (Westinghouse Electric & Engineering Co., East Pittsburgh, Pennsylvania.)



WESTINGHOUSE UNDERFEED STOKER

A NEW HORIZONTAL CEMENT CHURN.

The cement churn here pictured possesses several constructive features that will at once appeal to the maker of rubber cement. It is built along simple yet sturdy lines and with only two bearings that are exposed to wear. The shape of



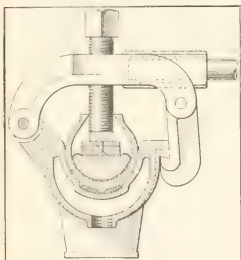
A NOELL CEMENT MIXER.

the barrel automatically works the contents from end to end, and over and over, as the churn revolves, thereby producing a thoroughly mixed solution in the shortest possible time.

The frames of the machine are of channel-shaped cast iron and rigidly supported by four tie-rods. The cast-iron spiders, riveted to each end of the barrel, are provided with journals that support the barrel in the side-frame bearings. The joints in the head of the barrel are riveted, and all joints and seams are soldered inside and outside as a prevention against leakage. The body of the barrel is constructed from triangular, galvanized-iron plates that churn the contents from side to side when the barrel rotates. A brass filler cap, with a lip on each side and a quick-opening clamp attachment, enables the operator to draw off the cement from the top, free from settlements. The machine is furnished with tight-and-loose pulleys and built according to the required capacity. (The Roy D. Quin Co., Willoughby, Ohio.)

THE "WESTERN" RETREADING MACHINE.

The growing interest in rebuilt tires has greatly stimulated the builders of retreading equipment in improving the design of repair vulcanizers. It is claimed that the new machine here illustrated will produce various non-skid tread designs, including the Silvertown ribbed tread. A new feature is the multiple-spring pressure plate and centering blocks that effect an even distribution of the curing pressure.



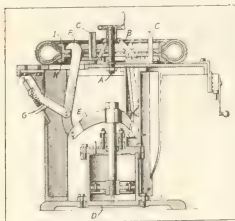
THE "WESTERN" RETREADER.

There are two molds to a complete outfit, retreading tires from 28 by 3 to 37 by 5. The equipment furnished with each set consists of six lever clamps, two multiple-leaf pressure springs, two sand-bags, one clamp-lever, one matrix bolt-wrench, one ratchet wrench, six centering blocks, four disk globe-valves, and all pipe fittings, etc., ready to connect to steam line. (Western Tire & Rubber Works, 321-323 North Crawford avenue, Chicago, Illinois.)

MACHINERY PATENTS.

MACHINE FOR APPLYING BEAD-CLAMPING RINGS.

BEAD-clamping rings used when curing tires on expansible cores or air bags, are quickly and accurately drawn into place by this machine. The figure is a vertical section through the center of the apparatus that consists of a circular table mounted on three legs at a convenient height for handling the tires. Mounted in the center of the table is a vertical screw, *A*, provided with a threaded nut and a collar, to which three links, *B*, are attached and adjustably connected to slides that terminate in vertical guides, *C*. A piston reciprocating in the cylinder, *D*, supports on its upper end a head with three arms *E*, to which are pivoted vertical arms terminating in hooks *F*. Pivotaly connected to the arms are links *G* terminating in spring slides that operate with the piston to control the clamping hooks.



BEAD-RING CLAMPING MACHINE.

Lower bead ring *H* is placed on the table by the operator and centered by guides *E*, when a tire containing an air bag is placed upon it and the upper bead ring *I* superposed. Air is admitted to the bag, meanwhile fluid pressure is admitted to the cylinder *D* whereby the hooks *C* engage the tongue of the upper head ring, thus drawing both rings together. When sufficient pressure has been forced into the air bag to properly seat the bag and the lower edges of the tire in the rings, the pressure is relieved and the piston forces the rings downwardly to the final position where they are secured by bolts through the tongues of the clamping rings. The piston is then forced in the opposite direction and the tire with the clamping rings is ready to be placed in the mold. (William C. Stevens, assignor to the Firestone Tire & Rubber Co., both of Akron, Ohio. United States patent No. 1,289,949.)

OTHER MACHINERY PATENTS. THE UNITED STATES.

- N^o 1,290,555. Fabric-housing machine. S. M. Ford, Budaepor, Conn., assignor to The Dunlop Co., Newark, N. J.
1,291,277. Tread-forming press. G. W. Steele, assignor to Firestone Tire & Rubber Co.—both of Akron, O.
1,291,434. Repair vulcanizer. J. W. Dean, Jr., Pond, Me., assignor to J. W. Dean, Sr., Pond, Me.
1,291,811. Sponge-trimming machine. J. Ellis, assignor to Feather-due Rubber Co.—both of Chicago, Ill.
1,292,052. Apparatus for manufacturing tires or interliners. W. F. Ray, Chicago, Ill.
1,292,182. Sponge-trimming machine. F. V. Wedlock, Chicago, Ill.
1,293,159. Rubber boot and shoe repair vulcanizer. C. E. Miller, Anderson, Ind.

THE DOMINION OF CANADA.

- 188,107. Sectional tire mold for use in superposition with other molds in vulcanizing press. J. A. Swinehart, Akron, O., U. S. A.
188,190. Tire-building machine. A. O. Abbott, Jr. and W. B. Norton, assignors of 1/2 interest—both of Detroit, Mich., U. S. A.
188,367. Core for molding hollow rubber articles. The Canadian Consolidated Rubber Co., Limited, Montreal, Que., assignor to R. Bena, Chicago, Ill., U. S. A.
188,486. Mold for pneumatic tires. E. Hopkinson, New York City, U. S. A.
188,487. Mold for pneumatic tires. E. Hopkinson, New York City, U. S. A.
188,488. Tire-vulcanizing apparatus. E. Hopkinson, New York City, U. S. A.
188,739. Fabric-testing device. The Canadian Consolidated Rubber Co., Limited, Montreal, Que., assignor to E. E. A. G. Meyer, Detroit, Mich., U. S. A.
188,870. Rubber-coating machine. The Canadian Consolidated Rubber Co., Limited, Montreal, Que., assignor to R. Holmes, Detroit, Mich., U. S. A.
188,871. Apparatus for making tobacco pouches. The Canadian Consolidated Rubber Co., Limited, Montreal, Que., assignor to F. E. Jamieson—both of Montreal, Que.
188,896. Repair vulcanizer. F. Low and W. G. Charleson, assignors to A. S. Mackey—all of Ottawa, Ont.

THE UNITED KINGDOM.

- 121,239. Apparatus for making golf balls, etc. W. J. Mellersh-Jackson, 28 Southampton Buildings, London. (Revere Rubber Co., 59 Reade street, New York City, U. S. A.)
113,347. Apparatus for stacking tires, etc. Dunlop Rubber Co., 14 Regent street, London, and C. Macbeth, Park Mills, Aston Cross, Birmingham.
113,355. Cutting machine for rubber bulbs. C. Achmach & Co., 59 Wallace street, Glasgow, and P. L. Liddell, 21 King's Road, Frestwich, Lancashire.

THE FRENCH REPUBLIC.

- 488,846. Improvements in saw-blades. M. I. Bonneau.

PROCESS PATENTS.

THE UNITED STATES.

- N^o 1,292,028. Manufacture of brake lining by vulcanizing starch-reinforced rubber-coated asbestos yarns after weaving. C. H. Oakley, Trenton, N. J.

THE DOMINION OF CANADA.

- 188,139. Manufacturing tires. The Canadian Consolidated Rubber Co., Limited, Montreal, Que., assignor to R. B. Price, Washington, D. C., U. S. A.
188,366. Manufacture of hose. The Canadian Consolidated Rubber Co., Limited, Montreal, Que., assignor to H. Z. Cobb, Winchester, Mass., U. S. A.
188,368. Manufacture of hot-water bags, etc. The Canadian Consolidated Rubber Co., Limited, Montreal, Que., assignor to R. B. Price, Washington, D. C., U. S. A.

THE UNITED KINGDOM.

- 113,439. Vulcanizing tire casings. E. Hopkinson, 1790 Broadway, New York City, U. S. A.

THE FRENCH REPUBLIC.

- 488,936. Manufacture of woven elastic webbing. Manufacture L. X. Pascal.
488,979. Utilization of used or unused pneumatic tires for the manufacture of soles, heels, shanks, and uppers for shoes; of gaiters, saddle-bags, etc.; and more generally of all articles of rubber or rubberized fabric. U. Chandeysson.

Commercial Service

Through our Commercial Service Department, in connection with our Buenos Aires Branch and numerous correspondents throughout the World, we are prepared to supply to merchants and manufacturers reliable information regarding trade conditions in foreign countries; and to aid them in obtaining satisfactory foreign representatives.

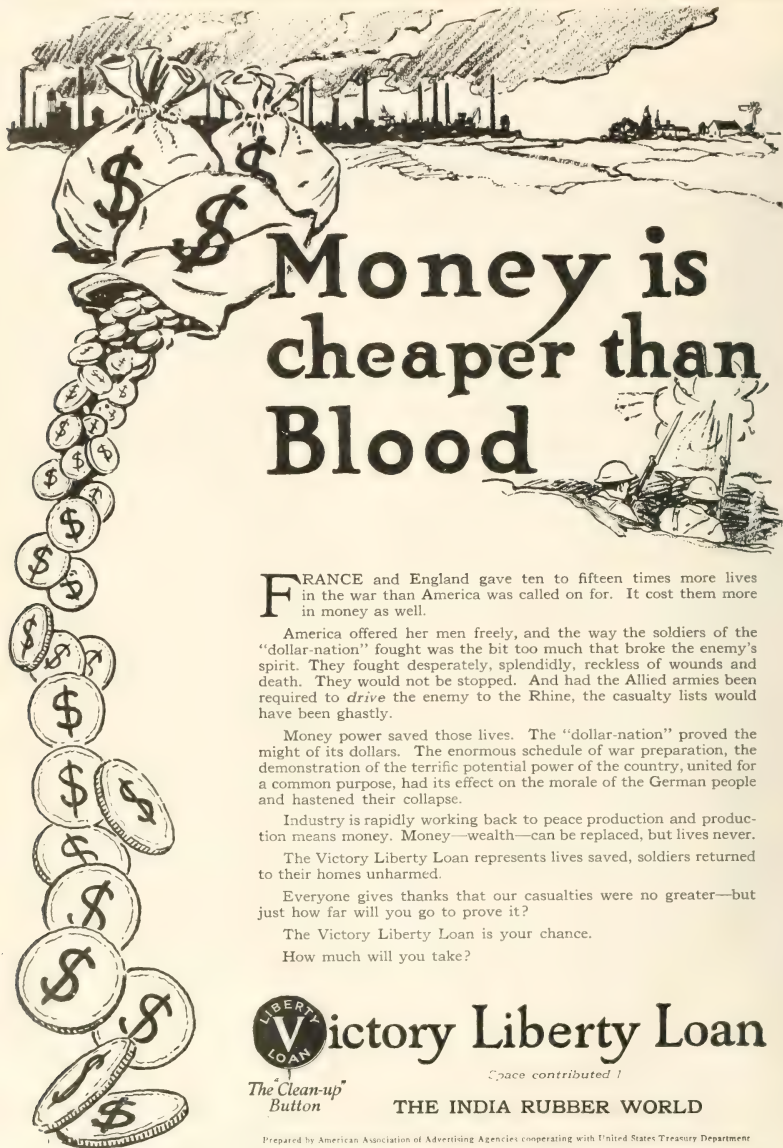
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Capital, Surplus, and Profits, \$27,000,000

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Money is cheaper than Blood

FRANCE and England gave ten to fifteen times more lives in the war than America was called on for. It cost them more in money as well.

America offered her men freely, and the way the soldiers of the "dollar-nation" fought was the bit too much that broke the enemy's spirit. They fought desperately, splendidly, reckless of wounds and death. They would not be stopped. And had the Allied armies been required to drive the enemy to the Rhine, the casualty lists would have been ghastly.

Money power saved those lives. The "dollar-nation" proved the might of its dollars. The enormous schedule of war preparation, the demonstration of the terrific potential power of the country, united for a common purpose, had its effect on the morale of the German people and hastened their collapse.


Industry is rapidly working back to peace production and production means money. Money—wealth—can be replaced, but lives never.

The Victory Liberty Loan represents lives saved, soldiers returned to their homes unharmed.

Everyone gives thanks that our casualties were no greater—but just how far will you go to prove it?

The Victory Liberty Loan is your chance.

How much will you take?



Victory Liberty Loan

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THE INDIA RUBBER WORLD

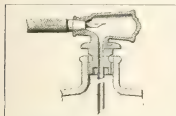
The "Clean-up" Button

Prepared by American Association of Advertising Agencies cooperating with United States Treasury Department

New Goods and Specialties.

A NOVEL FOUNTAIN-PEN FILLER.

A CONTRIVANCE to facilitate the filling of fountain pens has recently been invented, which consists of a compressible rubber bulb combined with an extension, also of rubber, having a conical mouth-piece into which the pen is put, and a base section intended to fit snugly over the top of an ink bottle as a stopper. This stopper is fitted with a tube reaching into the ink, and with air-vents at the top. When the rubber bulb is compressed, the air drawn from the pen is forced down the tube, through the ink, up and out through the air-vents, while the ink is forced up into the pen. (Parke J. Flournoy, 50 V street, Washington, District of Columbia.)



FOUNTAIN-PEN FILLER.

A NEW STYLE OF FOUNTAIN PEN.

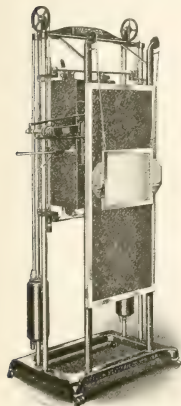
Unlike the ordinary kinds of fountain pen, which must be unscrewed in order to fill them, the one shown in the accompanying illustration simply pulls apart in the center, revealing within the presser bar for filling. The extent of the

TO FILL
DON'T WANT READY FOR REFILLING
THE LAUCHLIN "SAFETY" FOUNTAIN PEN.

opening is regulated by shoulders on the inner tubing and the holder which engage each other to prevent opening too far. This pen is patented in the United States and Canada. (Lauchlin Manufacturing Co., Detroit, Michigan.)

RUBBER IN THE FLUOROSCOPE.

The extent of the use of rubber in modern science is shown in one of its more recent adaptations in the lining of the tube-box in fluoroscopes used by Roentgen-ray diagnosticians. In the accompanying illustration the box is in the rear of the long screen in front, only one end being visible. The box itself is made of hard-wood, lead-coated outside and lined with opaque rubber, thus insuring protection from rays to both operator and patient. The fluoroscope is made in both vertical and horizontal form, the vertical one being shown here. (Wappler Electric Co., Inc., 173 East 87th street, New York City.)



WAPPLER FLUOROSCOPE.

"AUTOGRAPHIC" RUBBERS.

A recent patent provides for the insertion of means for holding a name-plate inside the in-step of a rubber overshoe, covered by a transparent pane of celluloid or similar material. This arrangement is provided

for when the rubber is manufactured, and any name-plate or card may be inserted under the celluloid through an opening at one end. (Alba C. Booth, Burlington, Vermont.)

A NEW GAME BALL.

A new ball to be used in playing soccer, basket-ball, and similar games, is covered with a material embodying the good qualities of both leather and rubber and containing some rubber in its composition. This covering is said to be stronger than leather and as resilient as rubber. It is not affected by the weather and may be used on wet ground without injury to the ball, as it is waterproof. It also retains its shape under such conditions and wears better than leather. A rubber bladder of the usual type is used inside. The ball is of regulation size and weight. (Rawlings Manufacturing Co., St. Louis, Missouri.)

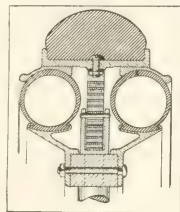


"RAWLINGS" RUBBER BALL.

"RAYBESTOS" MOLDED CLUTCH FACING.

The newest kind of clutch facing is molded instead of woven. It is said to be a great improvement and is being adopted as standard equipment by manufacturers of automobiles and disk clutches. The company that makes these facings

has discontinued the manufacture of the woven type except to fill orders previously in hand for that style of facing. The molded facing is composed of asbestos fiber and rubber. (The Raybestos Co., Bridgeport, Connecticut.)



"EAGLE" WHEEL.

Wheel Co., Inc., 17 West 42nd street, New York City.)

PUNCTURE-PROOF WHEEL.

The wheel shown here practically accomplishes the feat of being puncture and blow-out proof by its unusual construction. At the tread is a tire of solid rubber vulcanized to a steel rim. Beneath this rim are engaged two pneumatic tires between which a shock absorber is positioned. This shock absorber comes into use only in case of an overload to the vehicle or excessive wheel shock. (The Eagle Puncture-Proof Tire & Wheel Co., Inc., 17 West 42nd street, New York City.)

WHEEL WITH PNEUMATIC HUB.

Another solution of the tire-puncture question is developed in a wheel illustrated herewith. This wheel has a solid rubber tire at the tread, while the pneumatic cushion is located around the hub. A covering plate which can be easily removed gives access to the inflating valve and it is claimed that inflation twice a month is sufficient. The steel wheel may be equipped with any standard solid single, or dual tire equipment, the pneumatic hub providing the desired resiliency. (The Houston Pneumatic Puncture-Proof Wheel Co., Houston, Texas.)



"HOUSTON" WHEEL.

Foreign Import Duties on Boots and Shoes.

THE following table, corrected to February 1, 1919, by the Bureau of Foreign and Domestic Commerce, shows the foreign import duties on rubber boots and shoes of all descriptions, imported into the various countries from the United States.

Owing to the frequency of tariff changes the figures and information given in this table should be periodically verified. It is also advised that small trial shipments be made in order to test the rates prior to sending more extensive shipments.

In the first column is given the country, while the next column contains the articles, with notes regarding surtaxes, basis of rates, etc. The third column specifies whether the weight is to be taken as gross or net and the last gives the ad valorem duty or the rate of specific duty in United States currency.

Due to the restrictions upon importations of rubber manufacturers in France, Italy, the United Kingdom and certain other European countries, it is necessary for the foreign importer to secure a license before making shipments to those countries.

COUNTRIES.	ARTICLES AND REMARKS.	Weight.	Duty (U. S. Currency).
EUROPE:			
Austria-Hungary	Shoemakers' wares, with textile goods, per 100 pounds.	Net	\$11.05
Belgium	Manufactures of india rubber, ad valorem.	Net	10%
Bulgaria	Ordinary rubber basenast shoes (galoshes), per 100 pounds (includes 20 per cent surtax).	Net	\$10.51
	Other rubber boots and shoes, per 100 pounds (includes 20 per cent surtax).	Net	21.01
Denmark	Rubber boots and shoes, with textiles, per 100 pounds—including inner packing.	Legal	6.03
France	Rubber footwear lined with felt, wool, or any partly woolen cloth, per 100 pounds.	Net	13.13
	Rubber footwear lined with cotton, hemp, or flax cloth, per 100 pounds.	Net	10.51
	Footwear with soles of rubber, per pair.	Net	0.14
Germany	Footwear, with or without rubber soles—Unvarnished, per 100 pounds.	Net	7.56
	Varnished, per 100 pounds.	Net	8.64
Great Britain	Manufactures of rubber.	Free	...
Greece	Galoshes of rubber, per 100 pounds.	Net	\$30.78
Italy	Rubber footwear, lined or lined with textile goods.	Net	38.60
	Other rubber footwear, per 100 pounds.	Net	4.38
Netherlands	Rubber footwear, ad valorem.	Net	5%
Norway	Rubber footwear, per 100 pounds.	Net	\$11.16
Portugal	Rubber footwear (including luxury tax).	Net	0.91
Romania	Rubber footwear, per 100 pounds.	Legal	10.51
Russia	Rubber footwear, per 100 pounds.	Net	26.35
Sweden	Rubber footwear, per 100 pounds.	Net	12.26
Switzerland	Rubber footwear, per 100 pounds.	Net	26.26
	Rubber footwear, per 100 pounds.	Net	14.59
Switzerland	Rubber footwear, per 100 pounds.	Gross	2.63
Turkey	Rubber galoshes, boots and shoes.	Net	10.50
NORTH AMERICA:			
Canada	Rubber boots and shoes, ad valorem, including war tax (7 per cent).	Net	32 1/2%
	Imports of articles invoiced at prices less than the market value of such articles, when such articles are exported, are liable to a "dumping" duty if such articles are also sold in Canada.		
Newfoundland	Footwear and all manufactures in part or in whole of india rubber or gutta serena or rubber, including 10 per cent surtax.	Net	44%
CENTRAL AMERICA:			
Costa Rica	Rubber footwear, per 100 pounds.	Gross	\$21.09
Guatemala	Boots and shoes, and overboots of rubber or leather, per 100 pounds.	Legal	46.49
Honduras	Rubber boots, per 100 pounds.	Gross	65.44
	Footwear of rubberized cloth, per 100 pounds.	Gross	21.81
Mexico	Footwear of rubber or cloth and rubber, not including variable paper surtax, per 100 pounds.	Legal	22.59
Nicaragua	Rubber footwear (including surtax of 12 1/2 per cent of the duty), per 100 pounds.	Net	25.52
Panama	Rubber footwear, ad valorem.	Net	15%
Salvador	Rubber footwear, per 100 pounds.	Gross	\$46.14
WEST INDIES:			
Cuba	Rubber footwear with cotton fabrics, per 100 pounds.	Legal	11.82
Santo Domingo	Rubber footwear.	Net	11.35
St. Vincent	Manufactures of rubber, ad valorem.	Net	17.25%
Virgin Islands	Imports from the United States.	Free	...
SOUTH AMERICA:			
Argentina	Rubber footwear—includes surtax of 7 per cent—duty based on valuation of \$54.72 per 100 pounds.	Net	47%
	Footwear of cloth and rubber, with sole measures 9.84 inches (25 centimeters) or less, duty based on valuation of \$2.90 per dozen, includes surtax of 7 per cent of valuation.	Net	47%
	Name footwear, larger sizes, duty based on valuation of \$6.76 per dozen, includes surtax of 7 per cent.	Net	47%
Bolivia	Rubber footwear for men, surtax of 15 per cent is included, based on valuation of \$14.00 per dozen pairs.	Net	\$17.55%
	Rubber footwear for women and children: Overshoes, rubbers, boots, lined or not, including surtax of 15 per cent, based on valuation of \$9.56 per pound, legal.	Net	46%
	Footwear for women and children with exterior linings with or without interior linings, including surtax of 15 per cent, based on valuation of \$0.88 per pound, legal.	Net	46%
Brazil	Rubber footwear—nominally 3 milreis per kilo—per 100 pounds.	Legal	\$61.01
	(Footwear made of Pará rubber, 5 per cent of the rate shown.)		
Chile	Rubber footwear of all kinds, per 100 pounds.	Net	33.11
Colombia	Rubber footwear, including surtax of 7 per cent of duty, per 100 pounds.	Gross	48.53
Ecuador	Rubber footwear, per 100 pounds.	Net	30.02
Paraguay	Rubber footwear, with sole measuring 25 centimeters or less, includes surtax of 1 1/2 per cent of valuation, based on valuation of \$5.79 per dozen pairs.	Net	63.5%
	Rubber footwear of larger sizes, based on valuation of \$11.58 per dozen pairs.	Net	63.5%
Peru	Rubber footwear, including weight of inner packing, at ports of Callao, Salaverry, Potos and Pisco, surtax of 10 per cent, per 100 pounds.	Legal	\$32.76
	At other ports—surtax of 8 per cent, per 100 pounds.	Legal	32.18
Uruguay	Rubber footwear, based on valuation of \$3.17 per dozen pairs—surtax of 14 per cent of valuation included.	Net	62%
Venezuela	Rubber footwear, including surtax of 56.55 per cent, per 100 pounds.	Gross	\$34.26

ASIA:			
Ceylon	Rubber footwear, ad valorem	...	7.5%
China	Rubber boots, per dozen pairs	...	\$07.3
	Rubber shoes, per dozen pairs	...	0.18
	Rubber boots, per 100 pounds	...	Net 18.82
	Rubber shoes, per 100 pounds	...	Net 21.79
	Rubber overshoes, per 100 pounds	...	Net 19.43
OCEANIA:			
Australia	Galoshes, rubber sand boots and shoes, and plimsolls, ad valorem	...	30%
	Rubber gum and wading boots, ad valorem	...	10%
New Zealand	Rubber footwear, ad valorem	...	34.34%
AFRICA:			
South Africa	Rubber footwear, ad valorem	...	20%
With a minimum per pair of—			
	Men's	...	\$0.18
	Women's	...	0.12
	Children's	...	0.06

Local weights are not uniformly construed, but generally includes the weight of the immediate packing or container, though in some countries fixed rate allowances are made. In Argentina, Bolivia, Paraguay, and Uruguay, the duties are to be computed upon the official valuations at the rates given in the first column.

Foreign Import Duties on Rubber Tires.

THE following table, corrected to February 1, 1919, by the Bureau of Foreign and Domestic Commerce shows the foreign import duties on rubber tires of all descriptions imported into the various countries from the United States.

The column marked "Weight" shows whether duties are levied on net or gross weight, or include simply the inner packings. The next two columns give the rate of the duty for each one hundred pounds in United States currency or the rate per cent ad valorem.

In the following monograph the surtaxes have been included

and the converted rates therefore indicate the actual duty payable.

Certain charges such as warehousing, customs handling, local taxes, revenue stamps, etc., are not included. The rates of duty shown, including the surtaxes as noted, should therefore be regarded as the minima. As changes in duties are likely to occur at any time, frequent verifications of these figures is advised.

Due to the restrictions upon importations of rubber manufactures in France, Italy, and the United Kingdom, it is necessary for the foreign importer to secure a license before making shipments to those countries. The same is true of the neutral countries of Europe other than Spain.

	Weight.	Rate per 100 Pounds, U. S. Currency.	Rate Per Cent—Ad Valorem.	
Canada			42.5	
(Ad valorem duties are based on the fair market value of the articles when sold for home consumption in the country whence exported direct to Canada.)				
Central American States—				
British Honduras			18	
(Duties based on price in the port of export.)				
Costa Rica	Gross	\$4.26		
(In addition, there is a warlike tax of 10.5 cents per 100 pounds.)				
Guatemala	Gross	7.21		
(A new tariff was adopted in 1917, but the enforcement has been indefinitely postponed.)				
Honduras	Gross	4.28		
Nicaragua	Net	3.62		
(A surtax of 12½ per cent of the duties is included.)				
Panama			15	
Salvador	Gross	13.81		
(A surtax of 12½ per cent of the duty is included.)				
Hawaii			Free	
(Imports from foreign countries are subject to the provisions of the United States tariff.)				
Mexico	Auto and motorcycle tires	Gross 16.94		
	Bicycle tires	Legal 45.18		
(Not including variable paper surtax.)				
Newfoundland			49.5	
(A surtax of 10 per cent of the duty is included.)				
West Indies—				
British—				
*Antigua		13.33		
*Bahamas		22		
*Barbados		11.25		
*Dominica		12.5		
*Grenada		10		
*Jamaica		16.66		
(Tires for motor vehicles are subject to a surtax of 20 per cent of the duty, which is to be added.)				
*Montserrat		13.33		
*St. Christopher-Nevis		11		
*St. Lucia		16.5		
*St. Vincent		17.2		
*Trinidad and Tobago		10		
*Turks and Caicos Islands		10		
*Virgin Islands		10		
Cuba		25		
Dominican Republic	Net	36.29		
Dutch Colonies			3	
COUNTRIES.		Weight.	Rate per 100 Pounds, U. S. Currency.	Rate Per Cent—Ad Valorem.
France—				
Guadeloupe				6
Martinique (rate not specified)				
(Imports of other than French origin pay also the regular French import duties.)				
Haiti				22.24
Porto Rico				Free
(Imports from foreign countries are subject to the provisions of the United States tariff.)				
Virgin Islands of the United States				Free
(Imports from foreign countries are temporarily subject to the duties formerly in force in the Danish West Indies.)				
South America—				
Argentina—Auto and solid tires	Legal	\$10.51		
Bolivia	Gross	20.29		12.51
Brazil—				8.89
Other auto tires				12.51
Motor truck tires				
Chile	Gross	6.61		
Colombia	Gross	6.97		
Ecuador	Legal	9.93		
Guiana—British				16.5
(When imported from the United Kingdom, Canada or Newfoundland, admitted at a reduction of one-fifth of the duty.)				
Dutch				10
French				5
(The regular French import duties are also collected on goods not of French origin.)				
Paraguay—Auto tires	Legal	38.08		
Bicycle and motorcycle tires	Legal	47.60		
Peru—Auto tires	Gross	24.35		
Other tires	Legal	36.42		45
Uruguay				
Venezuela	Gross	10.28		
Austria-Hungary	Net	13.81		
Belgium—Solid tires	Net	5.69		
Auto tires	Net	10.16		
(Casinos only.)				
Inner tubes	Net	14.88		
Bulgaria—Tires and tubes	Net	5.25		
Denmark—Auto tires	Net	6.08		
Solid tires				Free
Faro Islands				Free
Finland—Solid tires	Net	9.55		
Inner tubes	Net	5.30		
France—Auto tires and tubes	Net	13.13		
Auto tires	Net	8.75		
Cycle tires	Net	21.89		
Germany—Auto tires	Net	6.48		
Auto tires	Net	6.48		
Gibraltar				Free
Greece	Net	1.03		
Iceland	Net	0.24		
Italy—Auto tires and tubes	Net	5.25		
Malta				3
Netherlands				5
Norway	Net	3.65		
Auto tires	Net	3.65		
Motorcycle tires	Net	3.65		

* When imported from the United Kingdom, Canada or Newfoundland, admitted at a reduction of one-fifth of the duty. The cost of packing is excluded, except in Dominica, St. Lucia and Grenada, where it is included.

† A surtax of 10 per cent is included.

‡ The provisions of the Brazilian Budget Law for 1918, relative to rubber tires and other rubber goods, are continued, including a provision for the refund of 95 per cent of the import duties on rubber goods in general, if made of fine Pará rubber, and the tests and markings to be applied are specified.

COUNTRIES.	Weight.	Rate per 100 Pounds, U. S. Currency.	Rate Per Cent—Ad Valorem.
Portugal— (Conversion to U. S. currency based on the latest quotation of the paper milled)			
Romania—Auto tires	Legal	9.06	
Romania—Solid tires	Legal	4.90	
Russia—Cycle tires	Net	18.82	
Russia—Auto tires	Net	32.09	
Serbia	Net	10.51	
Spain—Solid tires	Net	17.51	
Spain—Casing and inner tubes	Net	23.64	
Sweden—Auto tires	Net	14.59	
Sweden—Solid tires	Net	9.73	
Switzerland—Auto tires	Gross	0.44	
Switzerland—Solid tires	Gross	0.06	
Turkey—Auto tires		15.00	
United Kingdom			Free
British—			
Ceylon			Free
Ceylon			7.5
(Duty based on wholesale cash price at bond, less trade discount at the port of entry)			
Ceylon			10
(Duty based on export price with addition of cost of transport [including insurance] to the port of final discharge)			
Federated Malay States			10
Hongkong			Free
India			5
(See note for Ceylon.)			
North Borneo			10
Sarawak			Free
Straits Settlements			Free
China			5
Chosen (Korea)			10
Dutch East Indies			10
French Indo-China			
(Imports from France are admitted free of duty, while imports from other countries are subject to the rates prescribed by the customs tariff of France.)			
Japan (including Formosa)—Auto tires	Net	54.50	
Japan (including Formosa)—Cycle tires	Net	70	
Mesopotamia			10
Persia			10
Siam			10
AFRICA			
Abyssinia			
Brabant			
Mauritius			150
Nigeria			25
Union of South Africa			25
(Duty based on the current value of home consumption at the place of purchase, including value of packing and agent's commission, if it exceeds 5 per cent.)			
Zanzibar			7.5
(The dutiable value of imports from Europe or America is taken to be the cost price [with charges], increased by 5 per cent on the invoice price [exclusive of charges], increased by 15 per cent on the invoice price [exclusive of charges].)			
Congo			10
Egypt			
(In Alexandria a wharfage tax of one-half of 1 per cent is added.)			
French Algeria			
(Imports from France are admitted free of duty, while the imports from other countries are subject to the rates prescribed by the customs tariff of France.)			
Italian—			
Libya			11
Somaliland			12
Tibet			12
Morocco			12
OCEANIA			
British—			
Australia			
(Duty based on fair market value F. O. B. at port of export plus 10 per cent. On casings weighing over 50 pounds and inner tubes over 1 pound each, 48.6 cents per pound, if higher than the ad valorem rate)			
New Zealand			Free
Guam			Free
(Imports of foreign origin are taxed 25 per cent of their value.)			
Philippine Islands			Free
(Imports of foreign origin are taxed 25 per cent of their value.)			
Tutuila			10
Legal weight is not uniformly construed but generally includes the weight of the immediate packing or container, though in some countries fixed tare allowances are made			

PNEUMATIC TIRES AND THEIR CARE.

WILL car owners continue to practice the economy methods adopted during the war? This is the big question to-day.

With tire manufacturers gradually resuming pre-war production and as the supply of tires reaches normal, will owners soon forget war's tire lesson and return to the old way of negligence and waste?

Statistics compiled by The B. F. Goodrich Rubber Co. disclose a tremendous increase in the sale of tire repair material and accessories during 1918. Tire sleeves, blow-out patches and plastic for plugging holes were used on a far greater scale than

ever before in the history of motoring. Car owners took the tire-care problem seriously. They were surprised themselves at the saving realized, and the added mileage they got from their tires. They saw the folly of their previous extravagance.

The accompanying illustrations show some of the most commonly neglected injuries to pneumatic tires.

INJURED BY CHAINS.

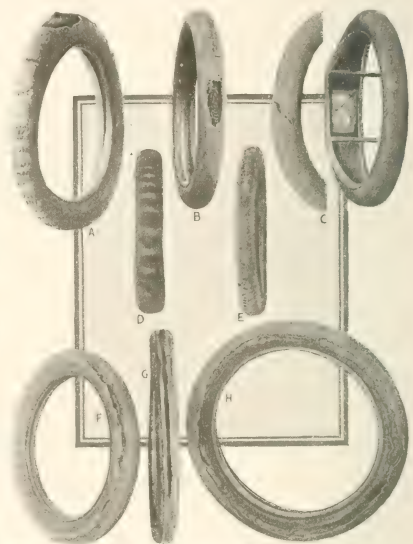
A.—The result of improper application of tire chains. Leave chains just loose enough so that every time the wheel turns the cross chains will not strike the same spot in the tire.

SKIDDING.

B.—The effect of skidding, caused by a sudden application of the brakes. Part of the face of this tire has been scraped off.

BLOW-OUTS.

C.—The result of neglect. First, the tire was cut entirely through by some sharp object. An inside temporary patch was applied but a permanent repair postponed too long. The temporary patch gradually pulled away from its original position and was forced through the break. Whenever inside patches are used, an outside emergency band should also be applied, and both



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TYPICAL INJURIES TO PNEUMATIC TIRES

removed and a permanent repair made as quick as possible while the injury is small.

UNDERINFLATION.

D.—The damage done by underinflation. The wavy condition of the tread of this tire is due to its having been run soft, with insufficient air, with consequent loosening of the fabric through no fault of manufacture. Most tire manufacturers have inflation schedules which they are very anxious to place in the hands of every tire user.

NEGLECTED COTS.

E.—A casing with two-thirds of its life wasted. Neglected cuts in the tough rubber tread always cause it to blister. Sand

and dirt are forced into the cuts and work around under the tread. Note several large "bumps" where these have accumulated. If a tire is carefully watched for these cuts, a little plastic will heal them quickly and no damage will result.

RUNNING IN CAR TRACKS.

Tire F has given less than 2,000 miles service, but it has been run in car tracks and the rubber is worn down to the fabric in a line following the circumference of the tire. Furthermore, the fabric has become worn and blistered. The casing is beyond repair.

FAULTY ALIGNMENT.

A more common tire injury is shown in illustration G. This effect is due to faulty alignment of the front wheels. A bent axle or steering knuckle may be responsible or possibly the demountable rim was not perfectly applied.

Accidents are not always responsible for the front wheels being out of alignment but frequently this is the case. All cars, through no fault in manufacture, are subject to this condition, and the first indication will be given when the tread of one or both tires wears as though a rough file had been used on them. If the tread becomes worn through, and the fabric affected, the tire is beyond repair. Test your front wheels frequently and be sure that they are in proper alignment.

RUT WORN.

H.—A tire that has been run in ruts. This wear on the side-walls occurs regardless of whether the ruts in the road are too large or too small for the tire. What's the answer? Keep out of the ruts. Tires were not made to withstand wear of this kind.

THE EDITOR'S BOOK TABLE.

THE PAN AMERICAN REVIEW. PUBLISHED MONTHLY BY THE Pan American Society of the United States, Inc., 15 Broad street, New York City. Price to non-members \$2 per annum; single copies, 25 cents.

THE first issue of this little publication contains fifteen pages. It is published by a group of prominent men who desire to help in developing and conserving mutual knowledge, understanding and friendship among the American republics and peoples.

ACCOUNTING AS AN AID TO BUSINESS PROFITS. BY WILLIAM R. Bassett. A. W. Shaw Co., Chicago, Illinois. (Cloth, octavo, 320 pages. Price, \$5.50 postpaid.)

Not a treatise on accounting in the ordinary sense, this work is rather an explanation of accounting for the every-day business man who wants to know best how to manage his business and demands that his bookkeeping be a real living history rather than a mere collection of figures. The assumption throughout is that the only accounting worth while is that which combines an exact book record of transactions with an exact book record of operations, so that causes as well as effects may be analyzed. Many tested plans, labor-saving methods, and 114 forms that have been successfully used by concerns throughout the country amplify the text, their object being less waste, dependable costs, faster turnover, savings in labor and lower selling expense. The chapters on statements of condition and operation, the value of good-will, depreciation, purchasing, costs of materials and labor, determining overhead and selling expenses, and control reports for the executive, are especially valuable to every progressive business man.

THE EDITOR IS THE PROUD RECIPIENT OF A COPY OF "GOVERNMENT WAR ADVERTISING," the report of the Division of Advertising, Committee on Public Information, inscribed to THE INDIA RUBBER WORLD, "whose patriotic contribution of space or services has helped to win the war through advertising." The report is a handsome 48-page quarto publication on dull finish paper with light-brown paper covers. It sets forth in detail the work of the Division of Advertising, describes the several advertising campaigns that helped to win the war, and lists

the contributions of space and services. In these lists the rubber and allied industries are represented by the following firms: Converse Rubber Shoe Co.; Cutler-Hammer Manufacturing Co.; E. I. du Pont de Nemours & Co.; Firestone Tire & Rubber Co.; General Electric Co.; Goodyear Tire & Rubber Co.; McGraw Tire & Rubber Co.; Star Rubber Co.; Taylor Instrument Cos.; L. E. Waterman Co.; Westinghouse Electric & Manufacturing Co.;

NEW TRADE PUBLICATIONS.

"WARP AND WEFT" IS THE NAME OF AN 8-PAGE ILLUSTRATED newspaper published "every little while" by the employees of the Brighton Mills, Passaic and Allwood, New Jersey. It is a breezy paper of general articles, news and personal mention of particular interest to Brighton operatives.

* * *

THE MORSE CHAIN CO., ITHACA, NEW YORK, IS DISTRIBUTING Publication No. 16 of the "Chain of Evidence" series devoted to small-power drives. It is a handsome 24-page pamphlet with many illustrations showing the application of Morse silent chains to a great variety of machinery.

* * *

THE SCHAEFFER & BUDENBERG MANUFACTURING CO., BROOKLYN, New York, has issued a large and handsome catalog of Columbia recording thermometers now extensively used in connection with rubber vulcanizers. Many illustrations and data render intelligent selection of the proper instrument an easy matter.

* * *

THE RUBBER COMPOUND BUREAU, AKRON, OHIO, IS DISTRIBUTING among rubber manufacturers of the United States and foreign countries a folder enabling the rubber chemist and superintendent to select any formula that he may need to improve his present line of manufacture.

* * *

"WHERE TO BUY NEOLIN SOLED SHOES FOR THEM ALL," IS THE title of a booklet recently issued by The Goodyear Tire & Rubber Co. of Canada, Limited, Toronto, Ontario. Other booklets from the same company of interest to the trade include: "Neolin—A Handbook of Information for Retailers and Their Salespeople," and "For Comfort and Hard Wear." These booklets contain a brief account of the inception of Neolin, testimonials from shoe manufacturers' lists of manufacturers who use these soles on their product, lists of styles, etc. They are printed on good stock with poster covers in colors.

THE OBITUARY RECORD.

INVENTED THE RUBBER STEP FOR VEHICLES.

GEORGE A. KEENE, inventor of the rubber step, or tread for vehicles and many other useful articles, died at the residence of his son in Rockford, Illinois, March 7, 1919, aged 87 years. He was a life-long resident of Lynn, Massachusetts. He is survived by his widow, one son and four daughters, besides ten grandchildren and seven great-grandchildren.

DAUGHTER OF A NOTED RUBBER MAN.

Miss G. Lillian Clapp, who died at her home in Boston, March 15, 1919, was the daughter of the late Charles M. Clapp, one of the pioneers of the rubber industry, who, with R. D. Evans, was proprietor of the old Aetna Rubber Mills in Boston in the 'sixties and 'seventies of the last century. Miss Clapp, who was born in 1858, was a public-spirited woman who devoted herself whole-heartedly to philanthropic work, being especially active as a member of the board of managers of the Bethesda Society, and holding similar offices with the Norfolk House Centre, Little Wanderers' Home and Homeopathic Hospital, and during the late war was prominent in Red Cross work. She is survived by her sister, Mrs. N. Hugh Cotton, who was Miss Harriet E. Clapp.

Interesting Letters From Our Readers.

FIRST-HAND NEWS OF BELGIAN RUBBER MILLS.

PROBABLY no man in the world is better known to the rubber trade than Captain Ernest B. Buckleton. His genial optimism and friendly tolerance have not been in the least dimmed by financial sacrifice, by months on the Western Front, by trench fever or by shell shock. Since the signing of the armistice, Captain Buckleton is able to resume business, and is visiting old friends among the European rubber manufacturers. A personal letter from him to the Editor is of such general interest that we take the liberty of letting his many readers read it also.

TO THE EDITOR OF THE INDIA RUBBER WORLD.

DEAR SIR:—I am now in Italy for a few days after a most interesting trip through Belgium and northern France.

I visited Liege first and had the pleasure after four and a half years of meeting Mr. Englebert, the head of the firm of Englebert & Co., and he gave me an account of the invasion of the Germans in 1914. He had the pleasure (?) of a visit from two of the leading German rubber manufacturers who took an inventory of his stock and machinery, the former of which was entirely commandeered by the Germans and part of the latter dismantled and sent back to Germany.

These two gentlemen, both well known to us, told Englebert the German army would be in Paris in three weeks, and when Paris was taken would go to Russia and clean them up. This was the first time that I had heard at first hand of their intentions. Englebert is one of the greatest Belgian patriots and would not work for the Germans, so they took his plant and turned it into a barracks, where they quartered over 2,000 troops during the whole of the war and it was there that the first red flag of the German revolution was hoisted. Englebert, on account of his loyalty, had a most uncomfortable time during the whole of the war. Fortunately, however, for him, he was Consul for Spain, which saved his scalp.

They left his works in very bad shape, stripped of all raw materials, and it will take several months to replace all the brass parts of his machinery, which they took. In this part of Belgium and Brussels, all the door knobs, knockers and brass plates have all been removed and in a great many places replaced with wooden ones.

During the German occupation the destruction was very severe and life must have been almost intolerable. You could be out at night only until a certain time; after that a permit was necessary, and if by any chance you overstayed your time five minutes, you were arrested. What a time these people had!

The price of food in Belgium has been and is very high. But-

ter has been \$5 a pound, is now \$2.50; eggs, 50 cents, now 20 cents each; meat, \$3, now nearly \$2 a pound; potatoes, 60 cents a pound; boots, now from \$25 to \$30 a pair; soap, 75 cents a small cake.

After leaving Brussels I went through the war zone of northern France, which was a good rubber centre. Michel-Jackson's plants at Menin and Halluin were in direct line of fire and nothing remains but the bare walls, two other small factories are nothing but ruins, and from there to Lille three other plants are wrecks. You can picture what this zone looks like if you could picture Trenton after a fire which swept the place from one end to the other, leaving nothing but the bare walls standing. I cannot see that this part of France can be rebuilt in this generation. It took me 10 hours from Brussels to Lille and 14 hours from Lille to Paris, usually a five-hour trip, and the journey is most uncomfortable. Most of the trains have no windows, no heat and people packed like sardines. I had to stand up for eight hours of my trip from Lille to Paris.

After staying in Paris for a week, I came to Milan and have had a good talk with young Dr. Pirelli, who has just got out of the army. He tells me that economic conditions in Italy are very bad. Very few people know how much Italy has done and how much she has suffered. She has had 480,000 killed and spent more than three-quarters of her wealth. How the country can be reconstructed is a grave problem. It certainly looks as if America is going to have her hands full for a generation in helping to reconstruct Europe, and the American business man will be asked to make many sacrifices as his part in this world's war.

Restrictions must necessarily be placed on imports to all countries in Europe that have taken an active part in the war, and a good many American manufacturers will chafe under them. I am confident they will keep up the good work and continue the good example shown in their wonderful response to the call for charities. I think it will take several years for France,



OSCAR ENGLEBERT



THE MICHEL-JACKSON FACTORY BEFORE THE WAR.

England, Italy and Belgium to reconstruct, and during this period America will help as her part in the three years when she stayed out of the war, which I think you will all admit was as much hers as ours in Europe.

Yours sincerely,

ERNEST B. BUCKLETON.

Milan, Italy.

FROM A WELL-KNOWN FRENCHMAN.

TO THE EDITOR OF THE INDIA RUBBER WORLD:

Dear Sir.—I send you enclosed a short note on rubber factories in the occupied territories, which have been destroyed by the Boches.

Among them were two particularly important factories, that of Englebert at Liege, which employed 3,000 to 4,000 workers, and that of Wolber at Soissons, which had as numerous a staff. Nothing remains and all the stolen equipment has been methodically transported to Germany. The damage done to the rubber industry in the invaded territories amounts to about forty millions of francs. To that must be added the formidable stocks of crude rubber which were at Antwerp, especially those consigned to Messrs. Osterieth & de Bude of a value of fifty or sixty millions, and which were simply stolen by the Boches.

Many factories using rubber and others making products used in rubber factories were situated in the territories occupied by the Germans. Of all these establishments nothing remains; the equipment has been sent to Germany. The generators, the steam engines, the electric motors, the transmissions, have also disappeared, stolen or destroyed. In many places the buildings themselves have been destroyed, either by bombardment or by fire.

The factory of Le Frant & Co., which was at Ham (Somme), one of the greatest manufacturers of substitutes, has disappeared.

The factory of Lufbery and Chardonniere at Chauny (Aisne), has also disappeared.

The rubber factory of Boinet, formerly Lefebvre, at St. Quentin, has been leveled to the ground.

The same is the case with the factories of electric cables of Jeumont (Nord), the Destrieux factory at Pont à Marcq (Nord), the Henry factory at Soissons (Aisne), the factory of the Colonial Rubber Co., at Urian and at Gand (Belgium), the Jackson factories at Halluin and at Menin (Belgium), and the two groups of Wolber factories at Soissons. About a dozen important factories disappeared during the war.

Yours sincerely,

ANDRÉ DUBOSC.

Bapaume-les-Rouen.

JUDICIAL DECISIONS.

NATIONAL METAL MOLDING CO. v. TUBULAR WOVEN FABRIC CO.—Circuit Court of Appeals, First Circuit, November 14, 1917.

A decision declaring the Osborn patent No. 652,806 for flexible electric conduit valid and infringed by the Tubular people's product was given in November, 1915, and the latter were enjoined from making their product. They changed it to eliminate the infringing feature.

Contempt proceedings were started by the National people when they started to make their modified article. The Court refused to hold them in contempt on the ground that the new article raised a new question of infringement. A supplemental bill of infringement was presented and the modified structure was held not to infringe the Osborn patent No. 652,806 for flexible electrical conduit. (Federal Reporter, Volume 254, page 304.)

DOWSE v. FEDERAL RUBBER COMPANY ET AL.—District Court, N. D., Illinois, E. D., December 7, 1918.

Byron C. Dowse, while employed by the Federal Rubber Co., being one of the largest stockholders and virtually in charge of the entire works of the company, invented a method of reinforcing automobile tires, known as the "double cable base." After applying for the patent, but before it was issued to him, Dowse sold his stock and severed his connection with the company. Suit was brought to test the validity of the patent and to ascertain the ownership of the patent.

If Dowse had been employed by the manufacturing company

taking orders from another officer of the company, then the patent would have been his personal property, and the company would only have an implied shop right to the invention. However, he being an officer the patent belongs to the company. It was also adjudged valid. (Federal Reporter, Volume 254, page 308.)

HOOD RUBBER CO. v. S. NEEDHAM TIRE CO.—Court of Appeals of the District of Columbia. Decided December 2, 1918. Patent appeals Nos. 1,180 and 1,181.

In trade-mark cancellation proceedings where each party sought the cancellation of the other's mark, a trade-mark consisting of the word "Needham," with the barb and feather of an arrow projecting beyond the end of the word, was held to conflict with a mark consisting of the picture of an arrow, the arrow being an essential and prominent part of the first trade-mark which had been in longer use.

The Examiner of Interferences dismissed the Needham company's petition for cancellation and sustained that of the Hood company, but on appeal an assistant commissioner cancelled the registration of the Hood company, ruling that because the arrow is one of the widest known and most useful functional signs, it could not be registered as a trade-mark.

After consideration of the evidence it was held that the appellant used the arrow-mark as a trade-mark and not as a functional sign, and that its use of this mark could in no way abridge the right of the general public to use the representation of an arrow as a functional sign. It was further contended that other persons have used the word "Arrow" or the picture of an arrow as a trade-mark in a similar manner, but the appellee was not allowed to raise that question.

The registration of the Needham Tire Co. was cancelled and that of the Hood Rubber Co. sustained on reversal.

FRASCHE SULPHUR LIQUEFACTION PATENTS INVALID.

The United States Circuit Court, sitting at Philadelphia, Pennsylvania, has just rendered a decision reversing that of the lower tribunal, decreeing that the so-called Frasche patents covering methods and processes of mining sulphur are not of basic patentability and that no control of certain mining methods is given by them. Sulphur deposits are, therefore, opened up and the studies and experiences which Frasche made and had are now open to the world. This decision debars the holders of the Frasche patents from otherwise exercising a monopoly for 31 years of underground sulphur liquefaction by the heat process.

This decision is of special interest, since the rubber industry of the United States is estimated to consume annually about 15,000 tons of sulphur.

A complete illustrated account of this Frasche method of sulphur mining will be found in THE INDIA RUBBER WORLD August 1, 1914, pages 597-599.

TRIED TO SELL REMADE TIRES AS NEW.

Early in February the Federal Trade Commission issued formal complaints against E. P. Jones and S. A. Paul and four concerns alleged to be operated by them in New York City, The Mercury Tire Co., Inc., New York City, The Akron Tire Co., Inc., Long Island City, New York, and William H. and George Batcheller, "dominant factors" in the Long Island City concern, charging attempts to "deceive and mislead the public" in selling remade old automobile tires under new names and brands as new tires.

The concerns, the Commission says it has reason to believe, purchased old and discarded automobile tires in various parts of the United States, cause them to be repaired and coated with a thin coating of rubber or composition of similar appearance, thus removing or concealing the name or brand of the original makers, and restamp them with new names or brands with the

purpose of misleading and deceiving purchasers into believing the tires are new tires.

The Commission points out that "it is the common belief and impression among dealers and consumers and the purchasing public generally, that automobile tires having the appearance and sold as new tires, are manufactured from new and unused material." The concerns, it is further charged, have "at all times" concealed and wholly failed to disclose that their tires are remade; and have circulated advertising to the effect that their tires are new and not made over.

In addition, the complaints charge false representations in advertising to the effect that the tires were guaranteed to run 4,000 miles, when "they well knew that said tires have been worn and discarded before being coated with the thin film of rubber or composition."

E. P. Jones and S. A. Paul were cited to appear before the Commission in Washington, March 11; the Mercury concern was cited to appear April 3, and the Akron company April 4.

GOODYEAR SALES METHODS LEGAL.

The methods of The Goodyear Tire & Rubber Co., Akron, Ohio, in doing business with its dealers and in refusing to sell to those who will not maintain its resale prices, is legal, according to a recent decision by Judge Augustus N. Hand, of the United States Court for the Southern District of New York, in which he sustained the demurrer filed by the Goodyear company in the suit filed against it by H. P. Baran, a Goodyear dealer, claiming infringement of the Sherman and Clayton laws.

The allegations of the plaintiff were substantially the same as the complaint of the Federal Trade Commission, as published on page 731 of THE INDIA RUBBER WORLD of September 1, 1918.

The Goodyear company contended that its object was to protect the public and insure maximum service from Goodyear products.

Judge Hand ruled that no decision of an Appellate Court "prevents a single trader from rejecting a customer because he does not like the prices at which the customer resold, or otherwise disapproved of his mode of conduct," and found nothing to show "how the alleged discrimination might substantially lessen competition" or "tend to create a monopoly."

This decision upholding the principle of price-fixing is particularly interesting for its far-reaching effect on the manner of distributing manufactured products to the consumer.

RUBBER TRADE INQUIRIES.

Trade inquiries that follow have already been answered, nevertheless they are of interest not only in showing the needs of the trade, but because of the possibility that additional information may be furnished by those who read them. The editor is therefore glad to have those interested communicate with him.

(700.) A correspondent requests the names of manufacturers of hand-operated machines for cutting rubber valves and washers.

(701.) An inquiry has been received for the names of concerns in the East that grind hard rubber dust for the trade.

(702.) A request is made for addresses of concerns dealing in white stainless rubber cement used in the millinery trade.

(703.) A correspondent desires information concerning a process for covering inner-tube poles with aluminum.

(704.) A manufacturer requests information concerning the manufacture of tennis balls and tennis shoes.

TRADE OPPORTUNITIES FROM CONSULAR REPORTS.

Addresses may be obtained from the Bureau of Foreign and Domestic Commerce or its district or cooperative offices. Request for each should be on a separate sheet, and state number.

(28,431.) A Belgian importer in England desires an agency for rubber soles.

(28,434.) An agency is desired for the sale in England and France of waterproof textiles, etc.

(28,449.) A firm in India desires to purchase and an agency for the sale of tires, tubes, and accessories.

(28,452.) A commercial agency in Honduras desires to represent sporting goods firms, f. o. b. American port. Correspondence may be in English.

(28,512.) A man in France desires an agency to sell rubber articles. Correspondence in French.

(28,518.) A man in France desires an agency and to establish a depot for the sale of asbestos, rubber, etc. Correspondence in French.

(28,564.) An Italian desires to represent American firms for the sale of rubber goods, etc.

(28,572.) A firm in India desires an agency for the sale of fountain pens.

(28,585.) A firm in Spain desires an agency for the sale of belting.

(28,601.) A man in France desires an agency for the sale of mechanical rubber goods.

(28,605.) Representative of an Australian firm, now in America, desires sole representation and to purchase rubber manufacturers' supplies.

(28,612.) A man in France desires an agency for the sale of rubber overshoes. Correspondence in French.

(28,621.) Member of a New Zealand firm desires exclusive agencies for sale of beltings, packing, etc.

(28,624.) A Norwegian concern desires agency for sale of rubber and rubber goods.

(28,636.) A man in Switzerland desires agency for sale of dress shields, suspenders, etc. Correspondence in French.

(28,642.) A man in Switzerland desires agency for sale of, or to purchase, balata belting, etc.

(28,656.) A Norwegian firm desires agency for sale of wire-insulating materials, belting, packing, etc.

(28,668.) A man in Italy desires to purchase or agency for rubber heels.

(28,680.) A Norwegian firm desires to purchase belting, asbestos and magnesia products, and rubber goods. Payment, banker's confirmed credit in New York. Correspondence may be in English.

(28,683.) A wholesale dealer in France desires to purchase and secure agency for sale of rubber and black-dyed caoutchouc for surgery, industry, etc. Correspondence in French.

(28,724.) A commercial agent in France desires agency for sale of rubber heels. Correspondence in French.

(28,727.) A commercial agent in France desires agency for sale of automobile tires and accessories.

(28,730.) A company in Australia desires to purchase rubber and composition floor-coverings, both in rolls and in art squares, f. o. b. New York. Cash against documents, less discounts. Correspondence may be in English.

(28,749.) Member of New Zealand firm desires agency from manufacturers only for sale of motor-vehicle tires.

(28,756.) A man in Belgium desires agency for sale of rubber. Correspondence may be in English.

(28,773.) Italian firm desires agency for sale of rubber goods. Correspondence may be in English.

(28,781.) Head of American firm in South Africa, now in this country, desires exclusive agency for sale of rubber goods.

(28,794.) A British Indian company, purchasing headquarters in New York, desires to buy direct from manufacturers, waterproofing materials. Payment against documents in New York.

MONTREY HAS CHAMBER OF COMMERCE.

An American chamber of commerce has been organized at Monterey, Mexico, and desires the cooperation of similar bodies in the United States. Wilbur T. Gracey is consul in that city.

News of the American Rubber Industry.

REELECTED OFFICERS OF THE B. F. GOODRICH CO.

THE B. F. Goodrich Co., at its annual meeting held on March 12, 1919, at its New York City office, reelected for three years its six directors whose terms of office expired, as follows: L. D. Brown, W. C. Geer, C. C. Goodrich, F. H. Mason, W. A. Means, and A. H. Noah. E. C. Shaw, who has served the company in an advisory capacity for the last year, will continue a director.



B. G. WORK.

At the subsequent meeting of directors, the officers of the company were also reelected, namely: B. G. Work, president; H. E. Raymond, vice-president; C. B. Raymond, W. A. Means, W. C. Geer, A. B. Jones, H. K. Raymond, and W. O. Rutherford, second vice-presidents; F. C. Van Cleef, secretary; L. D. Brown, treasurer; H. C. Hough, controller; J. C. Lawrence, assistant treasurer; H. C. Miller, manager tire sales.

DIVIDENDS.

The Apsley Rubber Co., Hudson, Massachusetts, manufacturer of rubber clothing and footwear, has declared its semi-annual dividend of three and one-half per cent on its common stock of record March 31, payable April 1, 1919.

The Dodge Manufacturing Co., Mishawaka, Indiana, manufacturer of transmission machinery, has declared the following dividends: quarterly, one and one-half per cent and one and three-quarters per cent, respectively, on its common and preferred stock, and extra, one per cent; due April 1 on stock of record March 28, 21 and 28, respectively.

E. I. du Pont de Nemours & Co., Wilmington, Delaware, manufacturers of rubber chemicals and artificial leather, have declared the regular quarterly dividend of four and one-half per cent on its stock of record February 27, payable February 14, and one of one and one-half per cent on its debenture stock of record April 10, payable April 25, 1919.

The Firestone Tire & Rubber Co., Firestone Park, Akron, Ohio, manufacturer of tires, rubber footwear and other kinds of rubber goods, declared its quarterly dividend of \$1.50 per share, payable March 20 to stock of record March 10, 1919.

The General Electric Co., Schenectady, New York, manufacturer of electrical machinery and equipment, has declared a dividend of \$2 per share, payable April 15 to stock of record March 15, 1919.

The Goodyear Tire & Rubber Co., Akron, Ohio, manufacturer of tires, balloons and all kinds of rubber goods, declared its quarterly dividend of three percent, payable March 15 on stock of record March 1, 1919.

The Kelly-Springfield Tire Co., New York City, tire manufacturer, has declared its quarterly dividend of \$1.50 per share on its six per cent preferred stock, payable April 1 to stock of record March 17, 1919.

The Keystone Tire & Rubber Co., New York City, tire manufacturer, has declared a stock dividend of 15 per cent on stock of record May 1, payable May 20, and the regular quarterly dividend of three per cent on its common stock of record March 21, payable April 1.

The Portage Rubber Co., Barberton, Ohio, tire manufacturer, has declared a quarterly dividend of three per cent on its common stock of record May 5, payable May 15, and one of one and three-quarters per cent on its preferred stock of record March 20, payable April 1, 1919.

The Standard Four Tire Co., tire manufacturer, Keokuk, Iowa, recently paid a cash dividend of 20 per cent on its common stock.

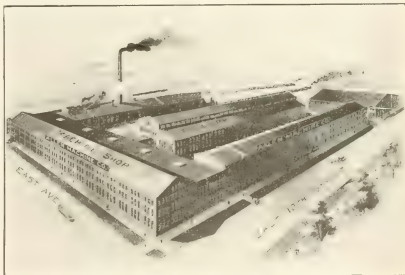
ALLEN MACHINE CO.'S NEW PLANT.

The Allen Machine Co. is now operating its new plant at Erie, Pennsylvania. It comprises a group of modern buildings specially designed and erected for engineering purposes, and includes, besides the office and engineering departments, buildings for patterns, storage, foundry and machine departments.

The foundry is 250 by 120 feet, divided into bays served by several cranes ranging from four to thirty tons in capacity. Two cupolas permit 100 tons of metal to be melted per day and individual castings up to 35 tons can be handled.

The machine department is 332 by 200 feet, with a gallery 250 by 60 feet for the lighter machine tools and assembling of small machines.

The Allen Machine Co. manufacture an extensive line of rubber mill machinery, including crackers, washers, and refiners. Mills up to 22 and 26 by 84 and calenders up to 32 by 92 are now in process of manufacture. The well-known Allen tubing



NEW PLANT OF ALLEN MACHINE CO.

machine is built in sizes inclusive of 12 inches bore, with heads adapted for straining stock, running solid truck tires, insulating, etc. cetera.

Other rubber working machinery produced by this company comprises vulcanizer presses, accumulators, hydraulic presses of all sizes, spreaders, fabric dryers, and a complete line for the manufacture and finishing of inner tubes.

WASTE MATERIAL DEALERS' CONVENTION.

The sixth annual meeting of the National Association of Waste Material Dealers was held at the Hotel Astor, New York City, on March 18 and 19, 1919.

The following are the newly elected officers for the ensuing year: Frederick W. Reidenbach, president; James Rosenberg, first vice-president; Henry Lessberger, second vice-president; Ivan Reiter, third vice-president; Paul H. Loewenthal, fourth vice-president; Mark B. Speer, fifth vice-president; Harry Klonick, sixth vice-president; David Feinburg, treasurer; Charles M. Haskins, secretary; directors for two years—George B. Smitheman, Julius Rosenberg, Herman Muehlstein, Herman Goldstein; other directors—Emanuel Salomon, ex-officio; Louis Birkenstein, ex-officio; Clarence White, H. H. Cummings, F. C. Overton, Daniel M. Hicks, Henry Atterbury.

United States Gumbo Co., Inc., Lubbock, Tex., 1919 (New York), \$1,000.
 F. Achels, W. W. Weidling, F. W. Rehner, all of 41 Meiser Street,
 New York City. To manufacture rubber goods.
 Valley Tire & Rubber Co., Inc., March 4, 1919 (New York), \$2,000.
 J. Jacobs, S. Bernheim, W. Lowenthal—all of 1877 Broadway, New York
 City. To manufacture tires, etc.
 Wear-Well Tire Co., February 20, 1919 (Delaware), \$50,000. I. H.
 McCann, 913 West Clayton street; G. C. Large, 207 Second street; M. F.
 Sheffer, Liberty street, all of New Castle, Pennsylvania. Principal
 office with the Colonial Charter Co., 927 Market street, Wilmington, Dela-
 ware. To manufacture, sell, and repair pneumatic automobile tires and
 tubes.
 Webster Tire Co., Inc., March 5, 1919 (New York), \$500. S. Dorfman,
 311 West 178th street; L. Benjamen, 636 West 160th street; L. F. Gahan,
 311 Sherman avenue—all of New York City. To manufacture tires, etc.
 Wellington Rubber & Supply Co., Inc., March 10, 1919 (Ohio), \$15,000.
 G. E. Gertz, president; R. Koonce, treasurer and general superintendent;
 J. M. Oberholzer, vice-president and secretary, all of Wellington, Ohio.
 Principal office, Wellington, Ohio. To manufacture balloons and dipped
 rubber goods.
 Weston Rubber Products Co., March 3, 1919 (Delaware), \$500,000.
 S. C. Wood, A. M. Brady—all of 30 North La Salle street, Chicago,
 Illinois; L. B. Phillips, Dover, Delaware. Delaware agent, United States
 Corporation Co., Dover, Delaware. To manufacture and deal in rub-
 ber, etc.
 West Gate Tire & Rubber Co., Inc., March 18, 1919 (New York),
 \$5,000. J. Jacobs, S. Bernheim, W. Lowenthal—1877 Broadway, New
 York City. To manufacture tires.

CRUDE RUBBER CONCERN INCORPORATES.

X. W. Obalski & Co., Inc., is a new concern incorporated by
 Xavier W. Obalski and others under the laws of New York, with
 a capital of \$200,000, to deal in crude rubber and rubber products.
 The offices of the new company are at 291 Broadway, known as
 the East River Savings Institution Building. Mr. Obalski was
 formerly a member of Obalski & Sweeney, Inc., incorporated in
 1915, which recently dissolved under the laws of the State of
 New York.

NEW CRUDE RUBBER CONCERN.

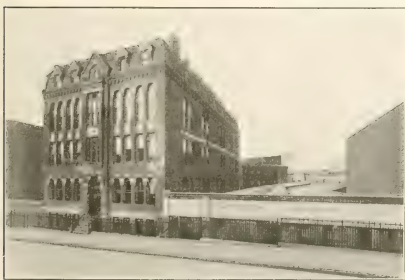
Sweeney & Co., Inc., is the title of a new corporation, or-
 ganized under New York laws with a capital of \$200,000, for
 the purpose of importing and dealing in crude rubber, with
 offices at 59-61 Pearl street, New York City, formerly occupied
 by Obalski & Sweeney, Inc., of which company Mr. Sweeney was
 president.

Mr. E. C. Sweeney, Jr., president of Sweeney & Co., Inc., has
 an extensive acquaintance and connections among the rubber
 manufacturers of this country and Canada and the new company
 commences business under the happiest possible auspices.

The other officers of the company are: George R. Sweeney,
 brother of the president, who has been elected treasurer and
 secretary, and George W. Sniffen, assistant secretary.

CAMERON MACHINE CO.'S ADDITION.

The Cameron Machine Co., 57-61 Poplar street, Brooklyn,
 New York, manufacturer of cutting and rolling machinery, sit-



ASSEMBLY SHOP OF CAMERON MACHINE CO.

ters, rewinders, et cetera, has recently completed a one-story
 addition to its plant, to be used as an assembly shop. It has been
 equipped at an approximate cost of \$20,000, and is now in use.

A PIONEER IN ELECTRICAL INSULATION.

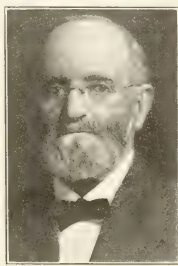
AN interesting double anniversary was recently celebrated in
 Newark, New Jersey.

It commemorated the nineteenth birthday of Henry A. Reed,
 president of the Bishop Gutta Percha Co., and the fifth birth-
 day of his second son, Henry D. Reed, vice-president of the same
 company. The great age of the "gutta percha pioneer" as well
 as his industrial accomplishments make a review of his career
 of more than passing interest.

Henry A. Reed was born in Carmel, New York, February 11,
 1829. At the age of 17 he began teaching school in Carmel, and
 learned telegraphy. In 1849 he was given charge of the tele-
 graph office in Carmel, and later transferred to Croton Falls,
 then to Hudson, and in 1852 was appointed one of the three
 operators in the New York City office of the New York, Albany
 and Buffalo Telegraph Co. Taking charge of the telegraph business



HENRY D. REED.



HENRY A. REED.

in Poughkeepsie in 1853, he had much time on his hands and
 thereupon opened a book store, and successfully managed both
 businesses. In 1876 he sold the book business, taking up expert
 accounting, and soon after assisted in the management of the
 estate of Mrs. Samuel C. Bishop, which was operating the Bishop
 Gutta Percha Works, and which was at that time threatened
 with a law-suit for infringement of the Sampson patent, cover-
 ing the use of gutta percha as an insulating material. A similar
 action had been decided against the Western Union Telegraph
 Co., but through the investigations of Mr. Reed an arrangement
 was made, whereby the suit against the Bishop company was
 withdrawn, the company agreeing to pay a royalty during the
 few remaining years of the patent.

Mr. Reed was made secretary of the company in 1885, and
 two years later, general manager. In 1893 he was elected treas-
 urer. In 1905 he became president of the company, the position
 he now holds. Mr. Reed has always taken a practical interest
 in electrical science and development. Believing that rubber
 would serve better than gutta percha for insulation, except under
 water, he engaged an experienced engineer to design and install
 machinery to insulate wire and cables with rubber. He collab-
 orated with the United States Light House Board in 1887 in de-
 vising a system for lighting river channels by lighted buoys and
 range lights. In 1888 he designed the first high-tension cables
 to be used underground. He was the first man in America to
 test faults by the galvanometer. He exhibited at the Electric
 Club in New York the first perfected phonograph made by Mr.
 Edison. He was one of the organizers of the Electric Club, and
 also of the Electric Trade Society, and is a member of the
 American Institute of Electrical Engineers.

Mr. Reed carries his ninety years lightly and is without ques-
 tion the youngest man of his age in the whole rubber trade.

TRADE NOTES.

The Rubber Trading Co., 9-15 Murray street, New York City, by unanimous consent of its stockholders has dissolved and a co-partnership has been formed to take over the business. The name remains the same and the members of the co-partnership are William T., Collier W., and Robert Lyle Baird, general partners, with Robert B. Baird as special partner.

The Gillette Tire Co., 1122 South Michigan avenue, Chicago, Illinois, has opened a distributing office at 347 Locust street, St. Louis, Missouri.

The Story Rubber Corp., 1328 Broadway, New York City, has purchased a plant at Hempstead, Long Island, where it expects soon to manufacture its "Bonner" tubes. The officers of the company are: Ernest D. Story, president; Elmer G. Story, vice-president, and Charles S. Fowler, treasurer.

The Kelly-Springfield Tire Co., New York City, at its annual meeting of stockholders, held March 14, 1919, reelected the following directors: Van H. Cartmell, Stephen Feabody, A. L. Scheuer, Jacob Oppenheim, Gustavus Maas, A. M. Poole, O. R. Cook, and F. A. Seaman.

The Lincoln Tire & Rubber Co., Detroit, Mich., has leased the entire building at No. 224, in addition to its previous location at No. 226, Jefferson Avenue East. This concern sells Meyer, Portage, Mohawk, Pennsylvania, and United States tires, and is sole distributor of Meyer tires for seven of the Central States. Guy B. Cross, president, is one of the directors of The Meyer Rubber Co., Cleveland, Ohio.

The Batavia Rubber Co., Batavia, New York, has been granted an order in the United States Circuit Court, terminating the receivership of M. H. Bochow. Mr. Bochow continues, however, as president. The creditors of the company received 50 per cent of their claims during the receivership and will now be paid the remainder. The company's plant is now running 24 hours daily, with three shifts of workmen.

The Ford Motor Co., automobile manufacturer, Detroit, Michigan, has built and is operating a small rubber tire factory, "simply learning how," it says, without intending at the present time to go into the manufacture of tires in any volume.

The Horseshoe Rubber Co., distributor of the Racine Auto Tire Co., Racine, Wisconsin, now has branches in fifteen cities of the United States.

The Broadway Tire Jobbers, Inc., 250 West 54th street, New York City, recently incorporated at \$125,000, carries standard makes of factory-blemished tires converted into seconds, as well as tubes, which it supplies to dealers.

The Lee Rubber & Tire Corp., New York City, held its annual meeting of stockholders on March 27, 1919, at its offices at 61 Broadway. The third annual report of the company for the fiscal year ended December 31, 1918, shows net sales for the year amounting to \$4,099,247, and a net profit of \$200,348.20, after deducting for federal taxes.

The Parker Tire & Rubber Co., 1014 Merchants Bank Building, Indianapolis, Indiana, is specializing on supersizes of cord tires. The company has completed its plant, 250 by 60 feet, with a boiler house 60 by 30 feet.

The Overland Tire & Rubber Co., Omaha, Nebraska, at its stockholders' annual meeting in January elected the following officers: James H. Davies, president; W. R. Blowers, vice-president and general manager, and Harry Hildreth, Jr., secretary-treasurer. The concern also voted to spend \$200,000 for machinery and an equal amount for buildings to comprise the first unit of its factory. The foundations and footings up to the first floor are now completed. The company expects to operate the factory about September 1, 1919. It will manufacture pneumatic tires and tubes, solid truck tires, and a general line of mechanical rubber goods.

The Nebraska Tire & Rubber Co., Inc., 3167 Spaulding street,

Omaha, Nebraska, has recently elected W. W. Wuchter treasurer and general manager of the company, succeeding E. G. Wolfe, resigned. The other officers are: Alva Smith, president; G. C. Feironnet, vice-president, and F. M. Holloway, secretary. These, with J. E. Cornish and S. C. Wolfe, compose the directorate. The concern is reorganizing under these officials and will equip its plant with the latest improved machinery, to begin operations July 1, 1919.

The Globe Rubber Tire Manufacturing Co., 1851 Broadway, New York City, at its annual stockholders' meeting on February 4, 1919, elected the following officers: J. B. Linder, president; H. W. Kugler and H. L. Hornberger, vice-presidents; F. H. Craig, secretary; H. B. James, treasurer, and R. E. Glass, assistant treasurer.

The Advance Rubber Co., 1717 Eighth avenue, Brooklyn, New York, has increased its capital from \$150,000 to \$1,000,000.

The McGraw Tire & Rubber Co. of New York, Inc., has leased the store at 1891 Broadway, New York City, and has also recently opened several new branches in other cities.

The Standard Four Tire Co., Keokuk, Iowa, is to build a two-story addition with basement to its plant, 60 by 125 feet. It will be equipped with new machinery with a view to increasing the company's production to about 1,000 tires daily. It is now turning out about 425 tires and 150 tubes a day.

The Johnstone Tire & Rubber Co., Peoples Gas Building, Chicago, Illinois, at its meeting held January 22, 1919, elected the following officers: E. C. Walton, president; B. R. Blackwelder, vice-president, and C. W. Mussey, secretary-treasurer. The concern is preparing to put on the market its patented braided cord tire, but at present is manufacturing solid truck and pneumatic fabric tires.

Henry P. and LeRoy H. Rindskopf, president and secretary-treasurer, respectively, of the Brooklyn Shield & Rubber Co., 397 Sumner avenue, Brooklyn, New York, have changed their name to Rand. Announcement of this was made March 10, 1919.

The Traveler Rubber Co. of Bethlehem, U. S. A., with offices in the Traveler Building, Philadelphia, Pennsylvania, will break ground about April 1, for a new two-story automobile tire plant, 60 by 200 feet, with power plant, at Bethlehem, Pennsylvania. The cost is estimated at \$250,000.

The Chester Novelty Co., Inc., Chester, New York, manufacturer of novelties, including the "American Inkless War Pen," illustrated in our issue of August 1, 1918, has increased its capital from \$15,000 to \$60,000.

The trade-mark "Lowell," used by the J. Spencer Turner Co., New York City, on its yacht duck, is now to be used also on its tire fabric. These goods were formerly sold by the Boston Yarn Co., Boston, Massachusetts, but are now handled exclusively by the Turner company.

The New Jersey Zinc Co. held a house-warming at its new home, 160 Front street, New York City, on March 7, 1919, arranged by C. A. Stedman, advertising manager. Moving pictures were shown and views of the company's mines at Franklin, New Jersey. F. C. Ryan gave a talk on the development of the industry. Before leaving, the guests were shown over the building, which contains, among other interesting features, a museum of a great variety of zinc products. A detailed description of the building, illustrated, was given in our issue of February 1, 1919.

The Okonite Co., 501 Fifth avenue, New York City, has increased its capital stock from \$650,000 to \$1,500,000, to consist of \$1,000,000 common and \$500,000 preferred, of which only \$200,000 preferred is to be issued at present.

The Morse Chain Co., Ithaca, New York, has announced the removal of the Kansas City office of its western representative, the Morse Engineering Co., from the R. A. Long Building, to 211-212 Finance Building. W. V. Warner is district manager in Kansas City.

The Belden Manufacturing Co., 23d street and Western avenue, Chicago, Illinois, manufacturer of rubber-insulated wire and cable, has increased its capital from \$1,000,000 to \$1,500,000, the additional stock to be issued as the demands of the business necessitate.

L. H. Homer, former treasurer of the Smith & Dove Manufacturing Co., Andover, Massachusetts, has been elected treasurer of the Carlisle Cord Tire Co., Inc., of the same town.

The Hood Rubber Co., Watertown, Massachusetts, is building a one-story addition to its garage, to cost approximately \$12,000.

SIXTH ANNUAL REPORT OF THE FISK RUBBER CO.

The sixth annual report of The Fisk Rubber Co., Chicopee Falls, Massachusetts, shows the following figures after being summarized:

ASSETS.		
Property, equipment, etc., less depreciation, replacements, etc.,	\$7,775,479.95	
Leasehold property	5,169.39	
Good will	8,000,000.00	
Investments, including Liberty Bonds, less deductions	\$15,780,649.34	
Current assets, including supplies, notes and accounts receivable, cash, etc.,	334,599.18	
Deferred charges, including rents and other prepaid items	22,298,491.03	
Capital stock outstanding	315,038.53	
	21,129,500.00	
LIABILITIES.		
Current liabilities, including accounts payable, accrued wages, etc.,	9,742,184.79	
Provision for Federal taxes	1,253,426.61	
Reserves for insurance, mileage, etc.,	238,801.14	
Surplus for retirement of preferred stocks	1,938,542.19	
Surplus per audited statement	4,425,923.35	
PROFIT AND LOSS AND SURPLUS ACCOUNT.		
Surplus—balance December 31, 1917, less Federal taxes, 1917	3,455,479.34	
Net profits, year ended December 31, 1918, after deductions	3,760,279.84	
Dividends paid	\$946,750.00	
Appropriation for retirement of preferred stocks in 1919	\$89,659.22	
Estimated Federal taxes, 1918	1,253,426.61	
	2,789,835.83	
Surplus balance December 31, 1918.	\$4,425,923.35	
(Net sales, \$36,682,163.78.)		

HOOD RUBBER CO. STATEMENT.

The Hood Rubber Co., Watertown, Massachusetts, has issued the following condensed balance sheet dated December 31, 1918, and subject to a reserve for income and excess profits taxes.

ASSETS	
Plant (real estate, machinery, etc.)	\$4,000,000.00
Merchandise	\$8,012,861.89
Accounts receivable	1,203,350.50
Cash	1,022,877.49
Investments in other corporations	285,400.00
Patents	1,000.00
Liberty Bond account	521,020.13
	\$15,045,509.71
LIABILITIES	
Capital Stock—common	\$3,000,000.00
—preferred	4,000,000.00
Notes payable	\$7,000,000.00
Accounts payable	148,904.73
Surplus	2,000,604.98
Liberty Bond account	505,000.00
	\$15,045,509.71

Merchandise in process of importation and letters of credit and drafts discounted in connection therewith, are not included in the foregoing statement.

FIRST DIVIDEND TO PETLEY CREDITORS.

The trustee for the Petley Rubber Co., Julius J. Goetz, 28 Miller Block, Milwaukee, Wisconsin, has paid a first dividend of 20 per cent to creditors and states that another will be paid in about two months when the final payment is due from the Everwear Rubber Co. which purchased the machinery from the Petley company. The trustee also states that there will be considerable shrinkage on the accounts receivable, due to apparently legitimate disputes.

CONNECTICUT NOTES.

Hartford was host, beginning with the evening of March 17, to fifty salesmen of the United States Tire Co. and officers of the United States Rubber Co. and the Hartford Rubber Works. A banquet was held at the Hotel Bond, and the out-of-town men remained for several days to hear addresses on sales efficiency and kindred topics.

The L. Candee Rubber Co., New Haven, Connecticut, has curtailed its running time to five days weekly, but it is expected to be a temporary schedule.

The bowling team of the L. Candee Rubber Co., New Haven, Connecticut, recently won from the bowling team of The Good-year's Metallic Rubber Shoe Co., Naugatuck, the United States Rubber Co.'s trophy by winning two games out of three. The teams are now even, and two more matches must be played before the permanent ownership of the cup will be determined.

The American Tire Co., Inc., New Britain, Connecticut, has opened an office at 166 Main street and expects soon to increase its capitalization. It was incorporated in 1918 at \$50,000, with the following officers: George L. Giller, president; Albert W. Meyers, vice-president; Philip Bardeck, treasurer; Louis W. Podt, secretary. These, with John C. Calloghan of Cohoes, New York, compose the directorate.

The Kelly-Springfield Tire Co., New York City, has established a direct factory branch at 359 Fairfield avenue, Bridgeport, Connecticut, in connection with a service station. A complete stock of tires and tubes will be carried.

A PROGRESSIVE CONCERN.

The Plant Rubber & Asbestos Co., 537-539 Brannan street, San Francisco, California, maker of mechanical rubber goods, and pipe and boiler coverings, has recently installed an up-to-date equipment for the manufacture of high-pressure asbestos packing.

This company that began business in 1898, specializing in steam packing and engineers' supplies, has grown steadily from the start and now occupies a three-story building comprising 40,000 square feet of floor space, and employs from 80 to 100



NEW FACTORY OF THE PLANT RUBBER & ASBESTOS CO.

hands. The officers are: S. L. Plant, president; Charles A. Wright, vice-president; E. H. Pierce, secretary, and George J. Sivers, treasurer.

The Meyer Rubber Co., Cleveland, Ohio, has purchased the plant of The Columbian Manufacturing Co., Columbiana, and is equipping it for the manufacture of pneumatic tires. It expects to operate the factory about April 15.

PERSONAL MENTION.

C. S. Putnam has been appointed branch manager of the United States Tire Co., New York City, at 245 Jefferson avenue, East, Detroit, Michigan. He has been with the company since 1911, advancing from the position of stock record clerk to city sales manager.

John B. Maus, export sales manager of The Fisk Rubber Co., Chicopee Falls, Massachusetts, has recently been elected chairman of the Foreign Trade Division of the Springfield (Massachusetts) Associated Industries.

A. F. Hill, for nine years with the New York Commercial Co. and for five years subsequently with the Rubber & Guayule Agency, has opened an office at 290 Broadway, New York City, where he will operate as a broker in crude rubber and allied gums. For the last year and a half Mr. Hill has been stationed at Camp Merritt as a government auditor.

A. G. Langer, former central district manager for the Diamond Rubber Co., Akron, Ohio, has been made central district manager of the Carlisle Cord Tire Co., Inc., Andover, Massachusetts, with headquarters at Chicago, Illinois.

Lee Anderson, formerly supervisor of wholesale branches, sales manager, and general manager, successively, of the Hupp Motor Car Corp., Detroit, Michigan, has become associated with Theodore F. McManus, Inc., a well-known advertising agency of the same city, which handles a number of automobile and rubber company accounts.

Miss Alice Nash, the well-known golf specialist, has become associated with the New York City office of Thos. E. Wilson & Co., Chicago, Illinois, manufacturers of sporting goods, game balls, etc.

W. G. Westlake has been appointed eastern sales manager of the motor truck tire department of The McGraw Tire & Rubber Co. of New York, Inc., 1891 Broadway, New York City.

R. S. Hardy has opened an office at 82 Beaver street, New York City, as a broker in crude rubber and allied products. He was formerly with J. T. Johnstone & Co.

C. F. Troupe has succeeded Frank M. Lee, resigned, as Milwaukee branch manager of The Fisk Rubber Co., Chicopee Falls, Massachusetts, with headquarters at 452 Milwaukee street, Milwaukee, Wisconsin. His territory covers twelve counties of the State of Wisconsin. He has been in the employ of the Fisk company nine years as special representative in different localities.

W. J. Gallagher, managing director of the United States Rubber Plantations, Inc., is returning from a visit to Ireland with his wife, and will go on to the company's plantations in Sumatra via the Pacific after a short stay in New York City. His recently elected executive assistant, George H. Seybold, left early in March for the plantations, by way of Liverpool from New York City.

David M. Figart, manager of the Singapore office of the United States Rubber Plantations, Inc., sailed with his wife late in February for the plantations after a visit in the States.

Philip Belford, manager of the Singapore office of the General Rubber Co., is visiting New York City.

L. J. D. Healy, for three years chief chemist and director of development work at the plant of the Federal Rubber Co., Cudahy, Wisconsin, has been placed in charge of the construction of the new "Horseshoe" cord tire and the new "Re-Cord" inner tube of the Racine Auto Tire Co., Racine, Wisconsin.

Myron H. Clark, general footwear factory manager of the United States Rubber Co., sailed recently for an extended business trip abroad in the interests of the company. His plans are to visit England, France and Italy.

Frank C. Thompson has been appointed purchasing agent for the Indianapolis plant of the Link-Belt Co., Chicago, Illinois, succeeding John E. Shideler.

Fred Stadelman, with the Wellman-Seaver-Morgan Co., Cleveland, Ohio, has been elected a director of the newly formed

Material Handling Machinery Manufacturers' Association, which has offices at 35 West 39th street, New York City.

C. W. Johnson has been appointed assistant manager of works of the Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pennsylvania, in whose employ he has been since 1907, first as chief inspector of works, and later as general superintendent. Mr. Johnson is a member of the American Society of Mechanical Engineers, American Institute of Mining Engineers, and the Engineers' Society of Western Pennsylvania.

W. J. Glendenning, consulting engineer and rubber, asbestos and balata expert, recently installed a department for the manufacture of asbestos high-pressure packing for the Plant Rubber & Asbestos Co., 537-539 Brannon street, San Francisco, California.

C. D. Studebaker has been appointed New York district manager for the Firestone Tire & Rubber Co., Akron, Ohio, to which position he has risen from that of credit manager for the New York branch seven years ago, subsequently becoming office manager and branch manager.

E. P. Jones succeeds C. D. Studebaker as New York branch manager of the Firestone Tire & Rubber Co., Akron, Ohio. He was formerly branch manager of the same company at Newark, New Jersey.

FREDERICK J. MAYWALD, F. C. S.

ONE of the best equipped laboratories in New York devoted to general analytic and chemical consulting work may be found in lower Manhattan not far from the "Swamp." Here, in fact, is a very interesting series of laboratories which occupy

four floors of an old-time brick structure where the owner, Frederick J. Maywald, and his corporate assistants conduct investigations on the chemistry of many manufacturing processes, specializing in problems relating to rubber.

Mr. Maywald is a native New Yorker, born June 25, 1870. His education was obtained in the New York public schools and Cooper Union from which he graduated in 1889, and

FREDERICK J. MAYWALD

promptly opened at Bartow, Florida, a laboratory in connection with the development of the land pebble phosphate mines, of that section. In 1893 and 1894 he was a private student of the late Doctor Peter T. Austin at the Brooklyn Polytechnic Institute and conducted a general analytic and consulting laboratory in New York City. In 1894, Maywald joined Professor Austin in consulting work in the latter's laboratory and succeeded to the business on the death of Professor Austin, December 30, 1907. He has since conducted the laboratories on an enlarged basis. They are now equipped with facilities unsurpassed in New York, for practically every line of manufacture and test.

Among the laboratory departments should be noted the technical library of 4,000 volumes, and special departments for electro-chemical work, ultra-violet ray tests, underwriters' hydraulic tests on hose, spraying apparatus for study of air-conditioning and drying problems, and a complete rubber-manufacturing plant including machinery for washing and



vacuum-drying crude rubber, compounding, calendering, vulcanizing, etc.

During the war the resources of the Maywald laboratory have been devoted to inspecting specification goods for the United States Shipping Board and other government departments.

JAMES H. LEARNED.

JAMES H. LEARNED, who sails next month on another trip across the Atlantic, has had a varied experience since he graduated at the age of 15 from the public schools at Chelsea, Massachusetts. For a year he did clerical work in the office of

Judge W. H. H. Emmons in Boston. The lawyer's profession not suiting his commercial ideas, he transferred his services to the sales department of the Revere Sugar Refinery, leaving there in 1888, and serving one year as bookkeeper at the shoe factory of Faunce & Spinney, Lynn, Massachusetts.

But bookkeeping was not to his taste, and in 1890 he joined the force of the Revere Rubber Co., Boston, as city salesman, afterwards becoming sales manager of the New England department. Besides covering this territory, special business for the company required him to make one or two trips abroad annually

for ten years previous to the opening of the European war, some of them extending over the Continent as far as Petrograd and Moscow, Russia.

As manager of the specialty department of the company, Mr. Learned has a widespread list of customers who regard him as a personal friend. He is fond of sports and is a crack golfer. He is a member of the Art Club and City Club of Boston, the Commonwealth and Country Clubs of Brookline, Massachusetts; the Rubber Association of America, New York City, and is high in Masonic bodies. He resides in Brookline, Massachusetts.

FISK SALES DISTRICTS REORGANIZED

The remarkable growth of the business of The Fisk Rubber Co. in the East has made necessary the division of its New England and New York territories into two separate sales districts. These will be known as the New England district, with Walter Oakes as district manager, and the western New York district, with George T. Newton holding the district managership.



GEORGE T. NEWTON.



WALTER OAKES.

In his elevation to the New England district managership, Walter Oakes receives a promotion for which he is well fitted by twelve deserving years of service with the Fisk company. His long association with the tire trade of Boston, Massachusetts,

has won for him a wide acquaintance whose best wishes go with him in his greater opportunity.

George T. Newton, who for the last three years has been in charge of Fisk sales in the two territories, will hereafter concentrate his efforts upon the supervision of direct factory branches in eight cities, including Buffalo, Syracuse, Rochester, Utica, Binghamton, Elmira and Albany, New York, and Erie, Pennsylvania. His headquarters will be at the Rochester branch.

FIRESTONE'S NEW ADVERTISING MANAGER.

Justin R. Weddell, who has recently been appointed advertising manager of the Firestone Tire & Rubber Co., Akron, Ohio, comes from the Corday & Gross Co., the well-known printing and advertising concern in Cleveland, Ohio, of which he was sales manager.

Mr. Weddell's wide acquaintance with national advertisers was acquired during his ten years' service with one of the large advertising agencies in Chicago, Illinois, and later with the Barnes-Crosby Engraving Co. of that city, of the Cleveland branch, of which concern he later became manager, developing the office by building up a special advertising service, with a large staff of artists and copy writers. This led to establishing the Weddell-Schmidt Co., in Cleveland, which enlarged still further Mr. Weddell's circle of clients and acquaintances.

This large business was amalgamated with the Corday & Gross Co., where Mr. Weddell's abilities as an organizer and developer of business were given full play, and he was appointed sales manager three years ago. He brings to his new position a thorough practical knowledge of every branch of the advertising business.

BABCOX GOES TO THE RUBBER PRODUCTS CO.

At the completion of its twentieth year of prosperous growth, The Rubber Products Co., Barberton, Ohio, announces the ap-

pointment of Edward S. Babcox as sales manager. Mr. Babcox goes to a company whose well-known products have been giving satisfaction to increasing thousands of users, and which, with the new Stronghold cord tire, soon to be ready for the trade, will offer a complete pneumatic tire line of great excellence. On the other hand, Mr. Babcox brings a wide experience to his new post. For the past six years he has been advertising manager of the Firestone Tire & Rubber Co., Akron, Ohio, and before that had been in charge of the advertising of the Burroughs Adding Machine Co., Detroit, Michigan, the Yawman & Erbe Manufacturing Co., Rochester, New York, and other nationally known organizations. He recently retired as president of the Audit Bureau of Circulations, and as vice-president of the Association of National Advertisers.



JUSTIN R. WEDDELL.



EDWARD S. BABCOX.

The Rubber Reclaimers' Division of The Rubber Association.

THE Rubber Reclaimers' Division of The Rubber Association of America is one of the most active divisions of that association, having an excellent record of accomplished results that are of benefit to the reclaiming industry. Therefore, some facts regarding the organization and its predecessor club may be of interest at this time.

Like many other trade associations, the Rubber Reclaimers' Club was the result of a get-together sentiment of the members of the trade to bring about better business relations among competitors, to solve business problems, and to eliminate trade abuses. A preliminary meeting was held in New York City on October 19, 1906, at which there were representatives from twelve leading reclaiming concerns. At this meeting, of which F. H. Appleton was chairman, and W. C. Coleman secretary, a committee was appointed to formulate a plan for forming an association. This committee consisted of F. H. Appleton, R. Loewenthal, A. W. Clapp, W. T. Rodenbach, and F. Schwab. The committee reported at a meeting at Hotel Belmont, New York City, on October 30, 1906, when the Rubber Reclaimers' Club was formed "to promote social intercourse and further the business interests of its members."

The charter membership in-

succeeded, in 1910, by Joseph F. McLean, of the Pequanoc Rubber Co., who had previously held the office of secretary. In 1911 F. H. Appleton, who had held the office of treasurer since the organization of the club, was elected president, and served in that capacity until the dissolution of the club in 1917.

At first the meetings were held monthly, but later, quarterly; meanwhile frequent committee meetings were held when necessary. At these quarterly meetings many important business questions were discussed, trade disputes considered, discussed and adjusted, and the whole trade brought into closer acquaintance. At each meeting the order of exercises was divided be-

tween "New Business" and "Experience Meeting," and during the latter many trade subjects were discussed to the benefit of the trade generally.

The most important measure in the history of the club, and the one which, aside from all others, would well justify its creation, was the establishment of a trade circular standardizing the sorting, packing and handling of rubber scrap. The first circular was issued in February, 1907, and others have been sent out annually each July since that date. This circular gives minute details which must be observed by the waste rubber dealers selling to the reclaimers and today the rules laid



FRANCIS H. APPLETON,
Chairman.



CLARK W. HARRISON,
Vice Chairman.



J. S. LOWMAN.



R. A. LOW.



J. S. CLAPP.



E. A. ANDERSEN.



J. F. MCLEAN.

cluded F. H. Appleton & Son, Bloomingdale Soft Rubber Works, E. H. Clapp Rubber Co., Canadian Consolidated Rubber Co., W. C. Coleman Co., Derby Rubber Co., Eureka Rubber Manufacturing Co., Hood Rubber Co., Loando Hard Rubber Co., Mechanical Rubber Co., New Jersey Rubber Co., Pequanoc Rubber Co., Philadelphia Rubber Works, Rickaby Rubber Co., Stockton Rubber Co., Joseph Stokes Rubber Co., United States Rubber Co., United States Rubber Reclaiming Works, and Westmoreland Rubber Co. At the meeting of November 8, 1906, the following were chosen as officers: A. W. Clapp, president; R. W. Seabury, secretary, and F. H. Appleton, treasurer.

On the death of President Clapp in 1907, W. T. Rodenbach, of the United States Rubber Reclaiming Co., was elected president, and on his resignation in November, 1908, J. A. Lambert, of the Empire Rubber Co., was chosen to that office. He was

down in the current circular form the basis for all such sales.

The circular gives rules for separating waste rubber into 31 grades, and has registered a telegraphic code for these grades which is much used in the business. It gives rules for methods of packing, circumstances under which consignments may be rejected, procedure for arbitration of disputes and similar rules which govern the methods of the business of buying and selling scrap rubber.

In 1917 it was decided that the activities of the club could be facilitated and advantage redound to the members if the club, as such, were dissolved and the members form a division of The Rubber Association of America. Accordingly, action to that effect was taken on February 8 of that year, and The Reclaimers' Division was instituted. The present officers are: Francis H. Appleton, chairman, F. H. Appleton & Sons, Inc.,

Boston, Massachusetts; Clark W. Harrison, vice-chairman, Bloomingdale Rubber Co., New York City; Harry S. Vorhis, secretary and treasurer, The Rubber Association of America, Inc., New York City. **EXECUTIVE COMMITTEE:** Francis H. Appleton, chairman; Clark W. Harrison, vice-chairman; E. A. Andersen, Rubber Regenerating Co., Naugatuck, Connecticut; John S. Clapp, E. H. Clapp Rubber Co., Boston, Massachusetts; R. A. Low, United States Rubber Reclaiming Co., Inc., New York City; John S. Lowman, Philadelphia Rubber Works Co., Akron, Ohio; Joseph F. McLean, Pequanoc Rubber Co., Butler, New Jersey.

The executive committee meets the second Tuesday in each month, and the division holds meetings quarterly. At one of the meetings plans were made to compile a complete census of the reclaiming industry and a technical committee was appointed to take up all matters of a technical nature presented by the reclaimers for research and experiment.

The present membership of the Division includes: F. H. Appleton & Son, Inc., Boston, Massachusetts; Bloomingdale Rubber Co., New York City; Boston Woven Hose Co., Cambridge, Massachusetts; E. H. Clapp Rubber Co., Boston, Massachusetts; Corona Rubber Reclaiming Co., Philadelphia, Pennsylvania; Goodyear Tire & Rubber Co., Akron, Ohio; Gutta Percha & Rubber, Limited, Toronto, Ontario, Canada; Hood Rubber Co., Watertown, Massachusetts; New Jersey Rubber Co., Boston, Massachusetts; Pennsylvania Rubber Co., Jeannette, Pennsylvania; Pequanoc Rubber Co., Butler, New Jersey; Philadelphia Rubber Works Co., Akron, Ohio, and Philadelphia, Pennsylvania; Republic Rubber Corp., Youngstown, Ohio; Rubber Regenerating Co., Naugatuck, Connecticut; Rubber Regenerating Co. of Canada, Montreal, Quebec, Canada; Stockton Rubber Co., Stockton, New Jersey; United States Rubber Reclaiming Co., New York City, New York, and the Xylos Rubber Co., Akron, Ohio.

Activities of The Rubber Association of America, Inc.

MANUFACTURERS SUPPORT THE CRUDE RUBBER CHARGE.

MANUFACTURERS representing 95 per cent of the crude rubber consumed annually in the United States have agreed to pay The Rubber Association three cents per hundred pounds on all crude rubber purchased by them. The amount is to

be added to the manufacturer's invoice by the importer, dealer, or broker who will remit the monthly collections to The Rubber Association. This charge became effective on and after March 1, 1919, on all rubber invoiced to the following manufacturers who are members of the Association:

RUBBER MANUFACTURERS, WHO HAVE SIGNED THE AGREEMENT.

A.	E.	L.	R.
Acme Rubber Mfg. Co.	Eagle Rubber Co.	Lancaster Tire & Rubber Co., The.	Racine Auto Tire Co.
Acushnet Process Co.	Faithampton Rubber Thread Co.	Lee Tire & Rubber Company.	Raymond Rubber Co.
Alex Rubber Co., Inc.	Electric Hose & Rubber Co.	Long-Wear Rubber Co.	Ray Tire & Rubber Co.
Amazon Rubber Co.	Elkairt Rubber Works.	Lovell Manufacturing Co.	Ravenna Rubber Co.
American Latex Rubber Co.	Empire Tire & Rubber Corp.	Luzerne Rubber Co.	Reading Rubber Manufacturing Co.
Amsley Rubber Co.	Essa Rubber Company.		Reading Rubber Manufacturing Co.
Archer Rubber Co.			Republ Rubber Corp.
Archer Strauss Rubber Co.			Rex-Hide Rubber Mfg. Co.
Armstrong Rubber Co., Inc.			Roberts Rubber Co., Woburn.
Avon Sole Co.			Rosenwald & Weil.
B.	F.	M.	S.
Batavia Rubber Co., The.	Faber Rubber Co., Eberhard.	McCreary Tire & Rubber Company.	St. Mungo Mfg. Co. of America.
Baumman Rubber Co.	Falls Rubber Company, The.	McGraw Tire & Rubber Co., The.	Samson Tire and Rubber Corp.
Beacon Falls Rubber Shoe Co.	Faustless Rubber Co.	McLean Tire & Rubber Co., The.	Savage Tire Co., The.
Beacon Tire Co., Inc.	Featheredge Rubber Co.	Mansfield Tire & Rubber Co.	Seamless Rubber Co.
BeSaw Tire & Rubber Co.	Federal Rubber Co., The.	Marathon Tire & Rubber Co.	Schwarzwaelder Co., The.
Bishop Gutta-Percha Co.	Firestone Tire & Rubber Co.	Marion Tire & Rubber Co.	Scioto Rubber Co.
Boston Belting Corp.	Fisk Rubber Co., The.	Mason Tire & Rubber Co.	Simplex Wire & Cable Co.
Boston Blacking Co.		Massillon Rubber Co.	Sioux City Tire & Mfg. Co.
Boston Woven Hose & Rubber Co.		Neade Rubber Co.	Somerset Rubber Reclaiming Wks.
Bourn Rubber Co.		Nerex Rubber Co.	Spalding & Bros., A. G.
Braender Rubber & Tire Co.		Nicholson Rubber Co.	Sprague Tire & Rubber Co.
British-American Mfg. Co.		Nihawaka Woolen Mfg. Co.	Stamford Rubber Supply Co.
Brunswick-Balke-Collender Co.		Norwalk Rubber Company, The.	Standard Four Tire Co.
C.	G.	N.	T.
Cambridge Rubber Co.	Gates Rubber Co.	National Rubber Co.	Thermoid Rubber Co.
Canadian Consolidated Rubber Co.	General Rubber Co.	National Tire & Rubber Co.	Twin Rubber Co.
Canfield Company, H. O.	General Tire & Rubber Co.	Needham Tire Co.	Twin Tube & Rubber Co.
Canine Rubber Co., The.	Gillette Rubber Co.	Newark Rubber Co.	Urethane Rubber Co.
Carlisle Cord Tire Co., Inc.	Globe Rubber Tire Mfg. Co.	New Jersey Car Spring & Rubber Co., Inc.	United & Globe Rubber Co.
Carlisle Tire & Rubber Co.	Goodyear Tire & Rubber Co., The.	New York Insulated Wire Co.	United States Rubber Co.
Carr Rubber Co., E. S.	Goodyear Tire & Rubber Co., The.	New York Mackintosh Clothing Co.	
Century-Plainfield Tire Co.	Gordon Tire & Rubber Co.	Norwalk Tire & Rubber Co.	
Century Rubber Works			
Chicago Rubber Clothing Co.			
Chippewa Rubber Co.			
Cincinnati Rubber Mfg. Co.			
Clifton Manufacturing Co.			
Columbia Tire & Rubber Co., The.			
Combination Rubber Mfg. Co.			
Continental Rubber Works.			
Converse Rubber Shoe Co.			
Corona Rubber Reclaiming Wks.			
Cross Insulated W. & C. Co.			
Cross Country Tire Co., Inc.			
Cupples Co.			
D.	I.	P.	U.
Davidson Rubber Co.	Indiana Rubber & Insulated Wire	Panther Rubber Mfg. Co.	United & Globe Rubber Co.
Davol Rubber Co.	Inland Rubber Co.	Parker, Stearns & Co.	
Dayton Rubber Mfg. Co.	International India Rubber Corp.	Partridge Rubber Co., Ltd., The.	
Delton Tire & Rubber Co.			
DeShetty Rubber Works, Inc., Eugene.			
Doss Rubber and Tube Co.			
Dryden Rubber Co.			
Delton Tire & Rubber Co.			
Du Pont-Fabrikoid Co.			
Dural Rubber Corp.			
E.	J.	Q.	V.
	Jenkins Rubber Co.	Quaker City Rubber Co.	Van Cleef Bros.
			Victor Balata & Textile Belting Co.
			Victor Rubber Co.
			Voorhees Rubber Mfg. Co.
			Vulcan Proofing Co.
			Vulcanized Rubber Co.
F.	K.	W.	W.
	Kaufman Rubber Co., Ltd.	Western Rubber Co.	Whitall, Tatum Co.
	Kelly-Springfield Tire Co.		White Dental Mfg. Co., S. S.
	Keystone Rubber Mfg. Co.		Whitehead Bros. Rubber Co.
	Kleinert Rubber Co., I. E.		Whitney Blake Co.
	Kokomo Rubber Co.		Worthington Ball Co.

¹ Additions to this list will be published in our next issue.

PLAN FOR COLLECTING RUBBER INDUSTRY STATISTICS.

MARCH 24, 1919.

The statistics on the rubber industry collected by our War Service Committee in 1918 were of value not only to the Government but also to the individual members of the industry. They presented, for the first time in the history of the rubber trade, a complete picture of the industry—its size, the amount of rubber consumed in total and by classes of articles, the value and quantity of output, and stocks of crude rubber on hand and in transit at various periods.

The unquestioned value of these statistics suggests the desirability of our continuing to collect them in 1919 and thereafter, under conditions which would insure proper secrecy for the returns from separate manufacturers, and which would provide for the publication of total figures only for the entire industry and the distribution of these totals to manufacturers who co-operated by making returns for their plants. The value to the Government, as well as to the industry, of a continuation of the statistics is indicated by the following quotation from a letter from the Honorable W. C. Redfield, Secretary of Commerce:

"I deem it of importance to the country and of value to this department to have the collection of rubber industry statistics continued. I earnestly hope the work will go on, and we shall be more than glad to have the privilege of using the statistics when they are gathered."

It is assumed by your directors that if proper means may be provided for insuring the secret custody of the individual reports, the main objection to rendering such reports—if any—may be obviated. To this end negotiations have been taken up with one of the largest trust companies in the country, and it will be possible to arrange for all questionnaires to be sent to them and tabulated by them as to the end-figures for distribution to the trade. To start with, we will not ask for questionnaires at more frequent intervals than semi-annually.

Would you be willing to continue making returns of the sort suggested herein, provided.

(1) That manufacturers representing approximately 90 per cent of the industry (based on volume of business) agreed to cooperate in furnishing the statistics?

(2) That publication of the information given confidentially should be only of total figures for the entire industry, and this data should be distributed only to manufacturers who aided in collecting it, by furnishing the necessary statistics?

We are enclosing herewith a blank which we hope you will be willing to sign and return to the Secretary in the enclosed stamped envelope.

THE SECRETARY.

CALENDERED RUBBER CLOTHING SECTION FORMED.

The Calendered Rubber Clothing Section of the Rubber Clothing Manufacturers' Division of The Rubber Association of America, Inc., was formed at a meeting held at the office of the United States Rubber Company, 130 Essex street, Boston, Massachusetts, on March 4, 1919, with the following officers: N. Lincoln Greene, chairman; George G. Bryant, vice-chairman; Harry S. Vorhies, secretary. EXECUTIVE COMMITTEE: N. Lincoln Greene, chairman, United States Rubber Co.; George G. Bryant, Chicago Rubber Clothing Co.; S. T. Hodgman, Hodgman Rubber Co.; William M. Tenney, Clifton Manufacturing Co.

The membership of the section is as follows: Apsley Rubber Co.; Archer Rubber Co.; Boston Woven Hose & Rubber Co.; Cambridge Rubber Co.; Chicago Rubber Clothing Co.; Clifton Manufacturing Co.; The B. F. Goodrich Co.; Hodgman Rubber Co.; United States Rubber Co.

STANDING COMMITTEES RECENTLY APPOINTED.

NOMINATING COMMITTEE.

Bertram G. Work, chairman, The B. F. Goodrich Co., New York City.

Harvey S. Firestone, Firestone Tire & Rubber Co., Akron, Ohio.

George B. Hodgman, Hodgman Rubber Co., Tuckahoe, New York.

Frederic C. Hood, Hood Rubber Co., Watertown, Massachusetts.

Henry C. Pearson, THE INDIA RUBBER WORLD, New York City.

The above are the last five past-presidents in the order named, and the Executive Committee expressed the hope that this precedent would be followed in succeeding years, as the last five past-presidents would be best qualified to nominate directors of the Association.

LEGISLATIVE COMMITTEE.

Charles Neave, chairman, general counsel, The Rubber Association of America, Inc., New York City.

F. C. Van Cleef, The B. F. Goodrich Co., New York City.

Ernest Hopkinson, United States Rubber Co., New York City.

ALTERNATE COMMITTEE.

Edward E. Huber, Eberhard Faber Rubber Co., chairman, Brooklyn, New York.

W. J. Kelly, Poel & Kelly, New York City.

OUTING COMMITTEE.

Francis R. Henderson, chairman, F. R. Henderson & Co., New York City.

A. A. Garthwaite, Lee Tire & Rubber Co., New York City.

L. P. MacMichael, L. P. MacMichael, New York City.

OBSERVATION COMMITTEE.

Horace DeLisser, Ajax Rubber Co., Inc., New York City.

Andrew H. Brown, Meyer & Brown, New York City.

Two members to serve three years to succeed those whose terms expire at the last annual meeting.

THE MID-SUMMER OUTING.

The Outing Committee held a meeting late last month and completed arrangements for a mid-summer outing of The Rubber Association to be held some time in June.

TRANSPORTATION IN SINGAPORE.

The commissioners of the municipality of Singapore have appointed a committee to report on means for improving the city system of transportation, with particular reference to the introduction of a municipal motor-transport service. The present tramway system is a private enterprise, the franchise under which it operates still having 19 years to run, but the service is already considered unsatisfactory and inadequate. In addition to the tramway route covering about 16 miles, there are operated approximately 9,000 jinrikshas and 468 hackney carriages, including over 200 motor vehicles for hire, besides 900 private jinrikshas. The tramways alone carried about 13,000,000 passengers in 1917.

RUBBER PRODUCTION IN BRITISH GUIANA DURING 1917.

The United States Commerce Reports give some interesting figures concerning rubber and balata production in British Guiana during 1917. Twenty new balata licenses were issued, making a total of 629 at the end of the year. The amount of balata produced from licensed tracts amounted to 1,291,241 pounds, as against 1,483,449 pounds in 1916. The number of laborers employed was 4,061 and the value of the balata exported amounted to \$1,024,176.

On the other hand, the amount of rubber produced decreased, the amount for 1917 being 14,781 pounds, as against 15,586 pounds in 1916.

It was hoped that the early rapid growth of the Pará rubber planted in the colony would continue, but in recent years the trees have been attacked by a leaf disease which has retarded their growth and even proved fatal in some cases. It is believed, however, that this disease will be conquered and that plantation rubber will become an important article of export.

EXPORTS.					
		1916		1917	
Product		Pounds.	Value.	Pounds.	Value.
Balata		1,575,502	\$848,541	17,9057	\$1,024,176
Rubber		15,586	8,289	14,781	8,349
IMPORTS.					
Manufactured rubber goods			1,222		6,109

THE RUBBER TRADE IN OHIO.

By Our Special Correspondent.

UNDER the direction of the Government during the last year there has been a saving of \$300,000,000, it is estimated, accomplished through the reclaiming of rubber alone, and a proportionate salvage of other materials.

Ohio cities, among others all over the country, conducted campaigns in connection with Red Cross work to induce their citizens to save rubber. In Cincinnati, "Mt. Rubber" was built in Fountain Square, composed of old automobile tires, inner tubes, and rubber accessories of all kinds. The illustration shows only the nucleus of the "mountain" that was afterward piled up, but the truck was contributed tires and all, because its owners "could not get the tires off," which was duly announced by the placard on the side. The sale of the rubber thus collected netted the Red Cross more than \$2,000.

In Akron, one of the big rubber companies announced in its publicity matter that it had reclaimed waste rubber and other materials to the amount of \$3,000,000 during the year.

In Denver, Colorado; Baltimore, Maryland; Detroit, Michigan, and Providence, Rhode Island, among other cities, the same idea of soliciting waste rubber goods from their citizens was utilized in various campaigns, some for the benefit of the Red Cross, some for the sale of War Savings Stamps. The idea even went across the sea, the British Ministry of National Service issuing a similar appeal for the benefit of the Red Cross.

Everywhere, throughout our country, the spirit of thrift and economy developed during the war has brought about a realization of the value of so-called waste matter which was formerly thrown away when it had served its original purpose.

MISCELLANEOUS OHIO NOTES.

In order to meet its need for tire fabric, The Mason Tire & Rubber Co., Kent, and the Mason Brothers Co., Cleveland, have incorporated The Mason Cotton Fabrics Co. and have had plans prepared for a \$3,000,000 mill to be built at Kent for spinning and weaving cotton, to have about 125,000 square feet of floor space. It will be of steel and concrete construction and will be equipped with modern machinery and apparatus so as to attain the exact degree of humidity and other conditions essential for the manufacture of raw cotton into tire fabric. The new plant will employ about 200 workmen. Both cord and flat tire fabric will be manufactured. The officers of The Mason Cotton Fabrics Co. are as follows: O. M. Mason, president; R. W. MacKinnon, vice-president; J. H. Diehl, vice-president; D. M. Mason, treasurer, and W. A. Cluff, secretary.

The Knight Tire and Rubber Co., Youngstown, Ohio, has changed its name to The Canton-Blackstone Co. This is a subsidiary of The Republic Rubber Corp.

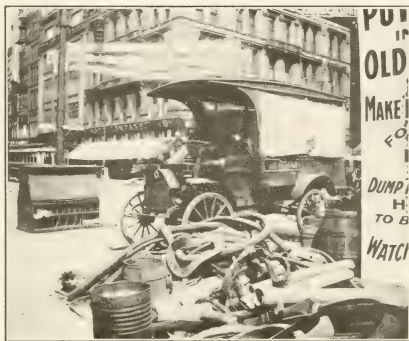
R. J. Firestone, Akron, former vice-president of the Firestone Tire & Rubber Co., has bought the old plant of The Standard Tire & Rubber Manufacturing Co., Willoughby, Ohio, which was recently in the hands of a receiver. A new company has been organized under the name of the Standard Tire Co., with the following officers: R. J. Firestone, president; C. A. McCul-

lough, vice-president; E. A. Tinnman, second vice-president and factory manager; Tom A. Palmer, secretary and treasurer.

The Acme Rubber Heel & Sole Co., Elyria, Ohio, manufacturer of fibrous heels and soles, elected the following officers at its stockholders' meeting on January 14, 1919: C. C. McDonald, president; A. J. Robson, vice-president; R. E. Griswold, secretary; H. A. Crandall, treasurer; B. W. Rote, general manager; G. Kolinski and E. M. Brush, directors in addition to the foregoing. This concern was incorporated in September, 1917, but did not actively engage in business until June, 1918. In January of the present year it opened a distributing station for "Acco" fiber products in Chicago, in charge of B. W. Elwert, at room 400, 208 North Wells street.

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The Chillicothe Tire & Rubber Co., Chillicothe, Ohio, has purchased a factory building and is buying machinery for making automobile tires. The company was incorporated in 1918. The officers are: C. A. Hertenstein, president; S. S. Wortley, Jr., vice-president, and W. W. Boulger, secretary and treasurer.



"COULDN'T GET TIRES OFF, SO DONATED TRUCK."

A. G. Snow, Paulding, Ohio, has been appointed state registrar of automobiles for the current year, succeeding W. A. McCurdy, of Columbus. Mr. Snow is at present chief drug inspector in the drug and food department of the State Agricultural Department.

AKRON NOTES.

The B. F. Goodrich Co., Akron, Ohio, undertook to reach its former employees overseas through their relatives and families in order to let them know that as soon as they return, there are positions waiting for them in the Goodrich organization. In almost every case this plan has been successful and the soldier or sailor located.

Lieutenant C. D. Sperry, formerly in the railway sales department of The B. F. Goodrich Co., Akron, Ohio, was recently decorated at Vallender, on the Rhine, with a French war cross, for his work in the Second Division in turning back the Germans at Château-Thierry.

W. O. Rutherford, one of the vice-presidents of The B. F. Goodrich Co., Akron, Ohio, has been elected president of the Better Letters Association. H. E. Ammerman, with The Goodyear Tire & Rubber Co., Akron, is one of the directors. The organization is national in scope and aims to make business correspondence uniformly efficient by the elimination of unnecessary practices and an extensive educational campaign.

H. T. Waller, organizer of the educational system of The B. F. Goodrich Co., Akron, Ohio, has been appointed general secretary of the Akron Y. M. C. A. He will have particular charge of work in connection with young men coming into the city; broadening the Americanization program; and providing for the colored young men of Akron. During his two and one-half years in charge of the Goodrich Bureau of Education, the department has taught a working knowledge of English to more than 2,000 foreign employees. A farewell reception was given Mr. Waller in the Goodrich cafeteria on February 28. The orchestra of Department No. 2 and the Goodrich male quartet furnished music. Refreshments were served after the speeches.

THE RUBBER TRADE IN LOS ANGELES.

By Our Regular Correspondent.

REPORTS from the leading rubber firms and rubber goods distributors in this section of Southern California report that the advance rubber business is much ahead of that of last year and that large orders are being placed for goods for the fall trade. There is a strong demand all up and down the Coast for rubber boots of all kinds, and consignments from the East are coming in rapidly. The constantly growing fishing industry of Southern California makes it an especially fruitful territory for the disposal of various lines of rubber boots, although at present the canneries are inactive just prior to the big spring run of fish. Fishermen are stocking up, however.

"Southern California has always been an exceptionally good territory for the sale of sporting lines of rubber footwear," says Lou M. Simpson, in charge of the rubber clothing and footwear section of the United States Rubber Co. "The climate of Southern California throughout the winter is such as to be conducive to outdoor sports, and there is always a demand for tennis and golfing footwear, while the sportsmen who use sportsmen's rubber boots are numbered in the thousands. The first of May sees the trout season in this part of the country in full blast, and the wise sportsman prepares for it in advance, while there are two or three open months in the winter when trout fishing is allowed in and around Ventura. There is no part of the country where the demand for rubber boots is greater than here, where the market fishing industry has assumed such proportions, especially when the war created such a demand for fish. Of course, all this created a demand for rubber products. There is no reason for any pessimistic cry of hard times at present. Of course, the principal demand on the part of buyers just now is for protection, and, assured of that, they are going ahead to replenish their stock of fall goods."

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George B. Clark, better known to his trade associates and intimates as "Nipples" Clark, from the plant of the Revere Rubber Co., Providence, Rhode Island, was in the city early in the month at the Hotel Alexandria. He spent a week or so among the trade explaining the merits of his line of golf balls.

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J. B. McGee, manager of the United States Rubber Co. for Arizona and Southern California, spent a week in Arizona in various sections, conferring with the rubber trade. The closing of the United Verde mines in Jerome and Bisbee was a temporary setback for the spring trade, but there are good prospects for a revival with the resumption of activities.

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The United States Rubber Co. in Los Angeles is taking an extra 20,000 feet of floor space for the accommodation of its business at its local establishment.

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"The abnormal conditions precipitated by the entry of this country into the war are rapidly passing," said D. M. Bixby, local manager of The B. F. Goodrich Co., "and this is resulting in a more stable condition generally. In Southern California business is continuing good, and we are looking forward to one of the best years in the history of the local branch."

"There is nothing to support the contention of some of the pessimists that the cessation of hostilities will result in curtailment and business depression. Conditions were never so good in Southern California. The influx of tourists is at present, and has been for some time past, in the nature of a record-breaker. This has stimulated the automobile trade in all its branches."

"The great volume of business which has been side-tracked for war activities is once more flowing into its accustomed channels, and every industry is resuming its normal proportions, and getting back to a peace basis founded on a substantial and legiti-

mate demand, but yet quickened by the necessity for supplying all the essentials of which the people of the United States have been denying themselves for so long, as well as many of the luxuries."

"Economic conditions are unquestionably adjusting themselves, but with increased foreign trade and the development all over the North American continent the prospect is encouraging rather than discouraging."

* * *

H. S. Firestone, president of the Firestone Tire & Rubber Co., Akron, Ohio, has leased the house of the late R. A. Rowan at Pasadena. Mr. Firestone arrived here just in time to give greetings and farewell to Henry Ford, who had been here for several weeks but was just on his way East. The close friendship of Mr. Firestone with Mr. Ford has given rise to the sensational report that has been the subject of endless discussion in the East that the tire magnate will be associated with the Detroit man in the production of the new \$250 automobile which Mr. Ford announced while here he intended to put on the market in a year from now to compete with his own noted vehicle.

Mr. Firestone made his first visit to Los Angeles in 1906, when he established a branch house here which was one of the first to be located on the Coast. His visit at this time is to make a thorough study of the commercial possibilities of this part of the country with the view of extending his business interests here and perhaps for the establishment of a branch factory. The local branch of his company in Los Angeles is under the direct management of his brother, E. S. Firestone.

Mr. Firestone declares that rubber is destined to be one of the chief industries of the United States in the near future. Now that most of the rubber plantations of the world are in the Orient, Mr. Firestone maintains that the logical course of this branch of commerce is through Pacific ports. It is his belief that many of the large Eastern concerns which buy through the London markets will in time divert the product through Western channels. He declares that the growth of the rubber industry on the Coast will naturally be followed by the establishment of large factories, as the accessibility of the Coast cities to the rubber plantations will be a great inducement to tire manufacturers to locate here. Mr. Firestone is confident that the automobile industry is only in its infancy, and that shipping by trucks will be the favorite means of future transportation.

Rubber, he predicts, will be cheaper, as will automobiles, just as soon as things are adjusted to a peace basis. He paid a particular tribute to the magnificent road system of California, which is the greatest asset to the development of the automobile business.

"The automobile has done almost as much to develop the country as have the railroads," concluded Mr. Firestone, "and if the industry continues to grow as it has done in the past, the result will be greater than can be dreamed of at present."

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Among the leaders in the rubber trade who have visited the Pacific Coast this winter, some of them to stay for months, are Colonel Samuel P. Colt and Charles B. Seger, of the United States Rubber Co.; Harvey E. Firestone, of the Firestone Tire & Rubber Co.; Joseph O. Stokes, president of the Thermoid Rubber Co., and Frank A. Seiberling, of The Goodyear Tire & Rubber Co.

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At a dinner given to Harvey S. Firestone by the Los Angeles Chamber of Commerce, the guest uttered the following promise: "Your Imperial Valley cotton is the best in the world, and as 75 per cent of the rubber coming into the United States is now being brought through the Pacific Coast ports, there is no reason why, if you build the cotton mills and the rubber plants, we should not make tires here."

THE RUBBER TRADE IN MASSACHUSETTS.

By Our Regular Correspondent.

BOSTON'S automobile show, held last month, was pronounced the most successful that ever occurred in this city, both in the attendance and in the number of cars exhibited. However, there were but few tires shown and not many exhibits of accessories specially interesting to the rubber trade. In many cases, such goods were shown not as exclusive exhibits by their manufacturers, but as units of stock of local general automobile supply dealers.

Among the many patching outfits and vulcanizing devices, there was included the Sepco vulcanizer, in which the heat is obtained by electric current, for which are claimed a number of points of superiority. Among the anti-puncture devices might be mentioned the Auto-Seal inner tube, manufactured by the Shaw Tire Co., Inc., Boston, and the Coffield tire protector, made by the Coffield Tire Protector Co., Dayton, Ohio.

The business of retreading tires is becoming important, and the Wakefield Tire Co., Wakefield, Massachusetts, had a fine exhibit of rebuilt and retreaded tires. Another exhibit was that of the American Retreading Corp., Chelsea, Massachusetts.

Among other exhibitors known to the readers of THE INDIA RUBBER WORLD might be mentioned the Boston Blacking Co., whose cements and tire paints call for crude rubber in the making. The Westinghouse air spring was on exhibition. The Joseph Dixon Crucible Co., Jersey City, New Jersey, showed a line of its graphite lubricants. The Sewell Cushion Wheel Co. exhibited its specialty. The United States Rubber Co. had a general line of accessories, and the L. C. Chase Co. had a beautiful exhibit of its automobile and carriage cloth, as well as other specialties less related to the rubber industry. In the Willard storage battery exhibit was shown the component parts of that battery, including the threaded rubber insulators which make an important part of its construction.

The Monatiquot Rubber Works Co., the well-known reclaimer of South Braintree, Massachusetts, will celebrate its tenth year of manufacturing on April 19.

This company's success has been due to the employment of a reclaiming method having features of special value in the processing of automobile tires. It claims to have been the first firm to grade the different makes and qualities of old tires, thereby guarding the uniformity and quality of the output.

It is an interesting fact that the original organization of 1909 remains practically unchanged in its personnel. Robert C. Harlow is president and factory manager; James H. Stedman, treasurer; Merton A. Turner, sales manager; Benjamin Ayer, production superintendent; M. H. Pingree, chief chemist.

The Hipco Manufacturing Co., Boston, has been incorporated with a capital stock of \$50,000 for manufacturing a number of automobile specialties, among them a running board mat of special rubber composition reinforced with a strip of fabric for waterproofing purposes, and adapted to cause the mat to lie flat and tight when fastened in place by bolts or screws running through copper-plated washers embedded in the rubber. The officers of the company are Thomas A. Glennon, president; Frederick J. Gleason, treasurer; and William E. Fleet, clerk. The directors are Elizabeth Gleason, James F. Guilhop and Charles Prinkworth.

At the annual meeting of the board of directors of the Franklin Rubber Co., held early last month, C. T. Small, one of the founders of the business in 1882, resigned the presidency because of impaired health. Asa C. Merrill was elected to fill the vacancy. Mr. Merrill has been connected with the rubber trade more than thirty years, having learned the business at the old Alfred Hale store on School street, associating himself with the Franklin Rubber Co. nineteen years ago. Everett L. Fuller was

relected treasurer. He is the senior of the old firm of Fuller, Leonard & Small, the predecessors of the Franklin Rubber Co. Linn L. Fuller, who was elected assistant treasurer, joined the company in 1907, but two years afterward entered the garage business, returning to the Franklin Rubber Co. in 1917 to take charge of the automobile department. The company is in a flourishing condition, and its store premises modern and in every way greatly improved by its reconstruction and renovations, following the fire damage of a few months ago.

The Converse Rubber Shoe Co., Malden, Massachusetts, is expanding. An addition, 40 by 80 feet, is being erected adjoining the main factory, which when finished will be occupied as the business offices, thus giving additional room in the factory building. The addition is of the same construction and design as the factory, and is so planned that further stories can be added when more room is needed.

M. M. Converse, president and manager of the company, at this writing is in Europe taking the opportunity to enjoy a brief respite from business. His youngest son accompanies him.

Americanization is progressing, hereabouts. One day last month eight automobiles containing 46 aliens, the greater part of them employed by the Converse Rubber Shoe Co., Malden, and all members of the Americanization classes of the Central Evening High School in that city, arrived at the Federal Building in Boston, and applied for their first citizenship papers. The evening before, they were given a lecture on the uses of the public library and then later were taken to police headquarters, where they were shown the rudiments of city government. During the time they have attended school they have been paid twenty-five cents an hour by their employers, who have been instrumental in their taking this step towards becoming citizens of the United States.

Frederic C. Hood, of the Hood Rubber Co., presided at a meeting and luncheon of the Associated Industries of Massachusetts, of which he is president, when 300 members gathered at Worcester, Massachusetts, March 4, to consider transportation and legislative matters. This association endeavors to render three distinct lines of service: first, service to the individual members of the association; secondly, services which are of value to manufacturers as a class; and thirdly, it endeavors to render service of a broader nature, which may be called perhaps community service; finally, the association is also interested in lessening the delay and cost of appeals from the decisions of the industrial accident board.

George W. Chase, one of the oldest workers in the Edgeworth factory of the Boston Rubber Shoe Co., Malden, died at his home in that city, March 7, aged 61 years. He entered the employ of this company 41 years ago, and for many years was a department foreman.

President B. T. Martin, of Everlastik, Inc., Boston, left recently for a trip to the Pacific Coast and will probably be gone until the early part of April.

The Hazen-Brown Co., manufacturers of rubber cements, has removed its business offices from Brockton to 727 Atlantic avenue, Boston, Massachusetts.

The rubber-cement factory of the Hazen-Brown Co., at Brockton, was threatened with destruction last month when a friction spark from the main belt ignited some gasoline which was being used by a woman employee. Unmindful of her own danger, she fought to extinguish the flames, and her efforts are said to have saved the factory, though she was severely burned about the head and body.

THE RUBBER TRADE IN NEW JERSEY.

By Our Regular Correspondent

THE Trenton rubber manufacturers are experiencing a slump in business at the present time, due to the after-effects of the world war. At first the tire and tube business remained good when the other departments began to show signs of slackening, but now the former departments are beginning to be affected. Rubber company officials are optimistic over the future, however, and say that when matters have become readjusted business will remain prosperous for years to come. Two Trenton rubber manufacturers are anxious to build additions to their plants and are awaiting a drop in the cost of materials before they start operations.

The India Rubber Co., New Brunswick, conducted a St. Patrick's social on March 17 at the New Brunswick club. R. S. Butler, of the United States Rubber Co., New York City, gave an address on "Organization and Management."

The United States Rubber Co., New Brunswick, has posted notices in its plant to the effect that hereafter the works will be operated only five days a week and that there will be no work on Saturdays. It is understood that the curtailment is due to the unprecedented weather conditions and that orders for rubber footwear have fallen off to a great extent.

Trenton rubber manufacturers are benefiting by the better shipping facilities and the cheaper rates of transportation due to the establishment of the new municipal dock along the Delaware River in South Trenton. The dock was recently opened and the Joseph Stokes, Thermoid, and Essex Rubber companies were the first Trenton rubber concerns to ship goods on the opening day.

The Joseph Stokes Rubber Co. has asked the Trenton City Commission for permission to construct an additional railroad spur track from its plant across Assanpink Park, which is owned by the city. The company desires better railroad facilities.

More than four hundred employees of the Thermoid Rubber Co. Beneficial Association recently held a banquet at the Hotel Hamilton with the young women of the office force as guests. Following the dinner, dancing was enjoyed. R. F. Lee, Jr., was the toastmaster.

Fire on March 19 caused a loss of \$30,000 at the plant of the Empire Rubber & Tire Corp. The blaze started among cotton fabric and spread to the cotton hose department on the third floor. Much of the damage was caused by water. A quantity of rubber stock was burned, but the building was little damaged. The sprinkler system at the plant saved the building from destruction.

The United & Globe Rubber Manufacturing Cos. have filed a certificate in the office of the Secretary of State showing that at a recent meeting of the stockholders it was decided to amend the certificate of incorporation by changing the name to the United & Globe Rubber Co. It was also stated in the certificate that there are 2457 shares of stock issued and outstanding.

The Howe Rubber Co., of New Brunswick, is building a two-story addition, 76 by 105 feet, to cost \$30,000. Approximately one-half of this building will be used for manufacturing purposes and the balance for new executive offices. The company is also building a one-story warehouse, 200 by 40 feet.

Almus E. Vinton has been appointed sales manager of the

New Jersey Gut Spring & Rubber Co., Inc., Jersey City, New Jersey.

F. F. Fox, Trenton, New Jersey, has been appointed New Jersey representative of the Monaquiot Rubber Works Co., South Braintree, Massachusetts.

THE RUBBER TRADE IN RHODE ISLAND.

By Our Regular Correspondent

NOW that the top-speed rush of the Rhode Island rubber manufacturing plants on contracts and sub-contracts for the Government and the Allies is practically over, all the concerns are now looking to orders on regular goods that have been given scant attention during all these months. A majority of the firms are taking advantage of this opportunity to overhaul the machinery, and to make necessary repairs and improvements. Because of this the plants have recently been closed in part or in whole for periods varying from a couple of days to a week.

About the middle of the month a five-day-a-week schedule was put into operation at the factory of the National India Rubber Co. at Bristol. The rubber goods on hand, it was stated, warranted a curtailment of the production, at least for the time being, although there are 4,500 hands working full time each day except Saturdays.

The American Wringer Co.'s adjourned annual corporate meeting, held last month at the office in the Grosvenor building, Providence, was presided over by Walter S. Ballou, president. The reports of the treasurer and secretary were read and accepted and the president gave a résumé of the past year's work, stating that the outlook for the next year is particularly bright. The directors for the ensuing year were elected as follows: Walter S. Ballou, Lyman Mills, A. J. Beardsley, J. F. Hemingway, R. J. B. Sullivan, Latimer W. Ballou and J. F. Fletcher, the latter being elected treasurer. The gross earnings of the company for the year 1918 were \$121,760; the expenses were \$106,834.41, and the net, \$14,925.59, but this was absorbed by the Government taxes of \$13,113.55 and a depreciation charge of \$1,812.37.

Extensive alterations, additions and repairs are being made at the plant of the Washburn Wire Co., Phillipsdale, East Providence. The entire plant will be completely overhauled by sections so as not to interfere with the operations of the concern.

The plant of the National India Rubber Co., at Bristol will undergo a general overhauling and renovation calculated to improve and increase the capacity of the various departments. The management's intention of continuing the general plan of increased efficiency, as well as the educational and physical welfare of the employees is shown by the recent formation of the National India Rubber Co. Foreman Club, which includes in its membership several hundred of the foremen, forewomen, and other officials of the factory force.

At the organization meeting Ralph S. Butler, of the commercial research section of the United States Rubber Co., New York, delivered an instructive address on "The Development of Team-Work" and his remarks were supplemented by Arthur Reeves, supervisor of production, vice-president George Schlosser and assistant superintendent Edwin I. Cooper. The following officers were elected: James W. Franklin, president; Miss Mary Reynolds, vice-president; Edward E. Bunn, secretary; George McClure, treasurer; directors for three years, George Schlosser and Miss Mary Connery; for two years, F. L. Dunbar, Douglas Morey, and Miss Bride Curley; for one year, T. E. Johnson, M. C. Smith, Jr., R. W. Holt, J. A. Wahlgren, Peter Vaccaro, Manuel Andrade, Miss Sadie Congdon, and Miss Mary Angello.

The day nursery, located at the corner of High and Bourn streets, which was organized by the management for children of the employees of the company, is ready for service and is certain to be of inestimable benefit to the workers. The rooms are finely furnished for the purpose and an isolation room provided where children affected with contagious sickness may be cared for. Mrs. John F. Reynolds is the matron.

The National India Rubber Co., Bristol, is fitting up a dental parlor for the benefit of its employees.

Miss Ruth Graham, formerly a nurse at the National factory, but now in the Navy, and recently returned from Queenstown, Ireland, where she was with a base hospital unit, has been at Bristol on a leave of absence with her parents.

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One of the many Providence concerns which played an important part in the production of war material was the Revere Rubber Co., a subsidiary of the United States Rubber Co. Thousands of balloons were turned out at the plant of this concern on Valley street, Providence, for use in dropping bundles of printed matter behind the German lines. These balloons, which were the result of tests carried on at the balloon school at Fort Omaha, Nebraska, under authority of General Churchill, commanding the Military Intelligence Section, were from six to nine inches in diameter when inflated, and were made of pure rubber of the transparent sort used in rubber gloves. When Uncle Sam had a message for the Boches in the front lines, he sent up one of these little balloons on a string. When it had reached the desired location a parachute was released by a pull of the string, and the propaganda thus distributed.

The plant of the Revere Rubber Co., Providence, is the scene of an unusual amount of improvement, either actively under way or to be commenced in the immediate future. This includes a new one-story boiler house of brick, 90 by 50 feet, for which the contract was awarded the past month. The contract for a new transforming house has also been recently awarded and work thereon has already commenced.

* *

The United States Rubber Co. has recently acquired a considerable tract of land on Kinsley avenue, Providence, located near the plant of the Nicholson File Co., containing approximately 43,000 square feet. Approximately \$60,000 changed hands on the transaction.

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Joseph Mawson, John Broadbent and Thomas Swain, have formed a copartnership as M. B. S. Company, located at 9-11 Winter street, Providence. They will carry Hartford and Alco bicycle tires.

* *

The Kelly-Springfield Tire Co., which recently opened warehouses at 143 Broad street, Providence, has leased the premises from the estate of B. B. Lederer for a period of five years.

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The Park Vulcanizing Co., 1198 Broad street, Providence, is being conducted by Edward N. Sheffers, according to information filed at the city clerk's office.

* *

The Goodyear Raincoat Co. has opened a fine large retail store at 425 Westminster street, corner of Union street, in one of the best locations in the downtown shopping section.

* *

The National Rubber Co., 36 Franklin street, Providence, is owned by Mildred E. Willis, according to her statement placed on file at the office of city clerk.

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The Broadway Vulcanizing Co., 31 Broadway, Pawtucket, is owned by Josephine C. Lee, according to the returns filed at the city clerk's office.

CANADIAN NOTES.

A LARGE and representative meeting of rubber shoe manufacturers and distributors was held on February 19, 1919, at the Windsor Hotel, Montreal, Quebec. T. H. Rieder, of the Dominion Rubber System, was chairman and R. H. Greene, of Gutta Percha & Rubber, Limited, secretary. The topics discussed included methods of sale, cash terms, datings and prices of different lines, bonuses, and the formation of jobbers' associations in various provinces where none at present exist. A committee was appointed to take charge of this last matter and arrange for forming such organizations in the Maritime provinces, Ontario, and Quebec. After the meeting, the guests were given a luncheon by the local members, at which interesting speeches were made by Colonel Massie, J. A. Connor, W. H. Alderson, R. B. Griffith, and others.

Among those who attended the recent third annual banquet of the Toronto Shoe Repairers' Association, at the Carl's Rite Hotel, were the following: Messrs. Thompson, Rogerson, and Thompson, representing the Dunlop Rubber Goods & Tire Co., Limited; Messrs. Harris, Johnston, Stewart, and Williams, representing The Goodyear Tire & Rubber Co. of Canada, Limited; and Messrs. Jeffrey, Mahaffy, and Wilson, representing the I. T. S. Rubber Heel Co., Limited.

The National Motor Show of Eastern Canada is to be held at the Victoria Rink, Montreal, Quebec, April 5-12, 1919. T. C. Kirby is manager.

The Canadian trade press reports the formation of the Canadian Trade Commission at Ottawa, Ontario, for the purpose of assisting in the maintenance and development of trade relations with foreign countries. Sir Charles B. Gordon is chairman, but will continue to act as chairman of the British War Mission, as he has done during the last two years; C. B. McNaught and H. W. Thomson will carry on the business in Ottawa. The Commission will keep in close touch with the Canadian Mission in London under Lloyd Harris.

The Van der Linde Rubber Co., Limited, Toronto, Ontario, is reported to have announced that it is anxious to give every possible preference to returned soldiers seeking positions.

The F. E. Partridge Rubber Co., Limited, Guelph, Ontario, is beginning the construction of a four-story addition to its plant, to be 100 by 65 feet, of reinforced concrete. It plans to use some of the space thus afforded, for the manufacture of cord tires on which it has been experimenting for some time. The Partridge company will also build soon a factory for the manufacture of rubber footwear. This unit also will be four stories high, 200 by 80 feet.

The Columbus Rubber Co. of Montreal, Limited, Montreal, Quebec, has appointed Emile Larose sales manager. Mr. Larose was formerly with the Canadian Footwear Co. in a similar position.

The Columbus Rubber Co. of Montreal, Limited, has designated as its Montreal branch the warehouse which it has recently taken over at 1464 St. Catherine street, East. It will maintain its sales offices in this building and ship to all customers and jobbers in Eastern Canada from this office.

Paul E. Lefebvre has been appointed manager of the Montreal branch of the above company, and A. D. Porcheron, acting manager of the Ottawa, Ontario, branch, succeeding R. Gratton, resigned.

The Kaufman Rubber Co., Limited, Kitchener, Ontario, intends to build a six-story reinforced concrete addition to its factory, 160 by 80 feet, as soon as building material can be obtained at prices nearer normal. The manufacturing capacity of the company will then be considerably increased and permit the use of more rubber machinery. This concern makes "Life-buoy" rubber footwear.

The Rubber Trade in Great Britain.

By Our Regular Correspondent.

THE annual meeting of the India Rubber Manufacturers' Association, held in Manchester at the end of January, was noticeable for the large attendance representative of the trade, several former outstanding firms of importance being now within the pale. The chairman, J. T. Goudie, presided and his survey of the past year's proceedings and his administrations of those to come were couched in equally optimistic tones. He quoted high official opinion to the effect that their association was recognized as one of the best equipped and progressive organizations in the country. Referring to the Government Rubber Control Committee, on which they were represented by Stewart A. Russell, of The Silvertown Company, he said that the committee was still retained by the Government in a purely advisory capacity though it seemed very improbable that any control would now be exercised over the imports of raw rubber.

The interesting announcement was made of the formation of a Reclaimed Rubber Manufacturers' Association, thus necessitating an amendment in the articles of association. Not having any special information, I do not know whether membership will be limited to reclaimers or whether those who do reclaiming as a part of a general substitute and rubber chemical business will be eligible. Since the introduction of American capital and American methods into the reclaiming industry of Britain, the business has, of course, assumed a more important position than it held twenty years ago and its products are not now referred to with bated breath in the trade. Another point is that its existence as an important industry has become known to government departments now that the country has so much discarded rubber on which it wants to realize at full value.

The association has now become associated with the Federation of British Industries and a special sub-committee has compiled a voluminous report on the rubber trade for the information of the Government. A topic of interest touched upon by the chairman was the government-aided association for industrial research in the rubber trade, the formation of which was in an advanced stage. Naturally there are not wanting among ordinary tax-payers connected with the various industries to be assisted those who view with some alarm the numerous raids made upon our depleted exchequer, and it is therefore in the first degree imperative that the various research associations should be conducted on lines conducive to the general welfare.

With regard to the formal business of the meeting Mr. Goudie was somewhat against his inclination reelected chairman for the fifth year in succession, a glowing tribute to his sterling qualities. The following men were elected members of the General Committee, a much larger body than was the case only a few years ago, due to the formation of sectional committees which nominate one or more of their members to serve on the general committee:

F. C. Baisley, The Dunlop Rubber Co., Limited, Birmingham; P. A. Birley, Chas. Macintosh & Co., Limited, Manchester; J. H. C. Brooking, St. Helens Cable & Rubber Co., Limited, Warrington; A. Cairns, A. Cairns & Co., Glasgow; H. C. Coles, Wm. Warne & Co., Limited, Tottenham, London; R. Eccles, F. R. Red-daway & Co., Limited, Manchester; Col. J. Gardiner, The Rubber Co. of Scotland, Limited, Stirling; J. T. Goudie, Leyland & Birmingham Rubber Co., Limited, Leyland; E. Healey, W. A. Bates, Limited, Leicester; A. D. Ingram, J. G. Ingram & Son, Limited, Hackney Wick, London; Alexander Johnston, The North British Rubber Co., Limited, Edinburgh; Sir G. C. Mandelberg, J. Mandelberg Co., Limited, Manchester; David Moseley, David Moseley & Sons, Limited, Manchester; C. R. Inart-

ley, George Spencer Moulton & Co., Limited, Bradford-on-Avon; T. C. Redfern, Redfern's Rubber Works, Limited, Hyde; Stuart A. Russell, The Silvertown Company, London; G. Spencer, Monarch Waterproof Co., Limited, Manchester; H. Standing, I. Frankenburg & Sons, Limited, Manchester; James Tinto, The Irwell & Eastern Rubber Co., Limited, Manchester; F. Webster, The Avon Rubber Co., Limited, Melksham; W. Wotherpoon, James Wotherpoon & Sons, Glasgow.

The secretary of the Association is W. G. Wilson, 16 Deansgate, Manchester.

DUNLOP RUBBER CO., LIMITED.

This concern continues to show increased strength and prosperity with a profit of £959,503 for 1917-18, against £435,100 for the preceding year, the ordinary dividend being raised from 15 to 23½ per cent. What, with rubber plantations and cotton mills and the incidents of the excess profits duty, the accounts are not particularly easy to follow or to compare with former years, so only a few lines of reference will be made here. The rubber estates are valued at £977,100, the planted area being 34,000 acres. The profits from this source and also from the cotton mills in Lancashire, of course, go some way to explain the net profits of the company, having almost doubled in a year of war trading.

XYLOS RUBBER CO., LIMITED.

An acceptable New Year's gift was received by the customers of this company in the form of a leather pocket wallet and detachable-leaf notebook combined. Some useful tables relating to specific gravities of compounding materials, properties of steam, etc., find inclusion, as well as a brief account of the company and its activities. From the information given it appears that the company was formed in 1913 for the purpose of reclaiming vulcanized rubber by a patented process, and judging by the clientele it has obtained in four years' business, its progress has been by no means slow. The management is in the hands of an experienced directorate, of which Marshall Stevens, M. P., is chairman, and Edwin L. Curbishley managing director. The works are situated in Trafford Park, the flourishing industrial suburb of Manchester, Mr. Stevens being the chairman of the Trafford Park Estates Co., Limited. The Xylos company claims that its special process gives marked advantages in the production of reclaimed rubber in black, white, and red colors for use in various branches of rubber manufacture. The process yields a soluble material which can be used with or without the addition of crude rubber-filling ingredients, etc., and which require only a percentage of sulphur to vulcanize into commercial articles of soft vulcanized rubber. Great attention is paid to elimination of all traces of metal and to keeping up uniform standards of value, matters of the first importance in a business whose products go not only to home consumers, but also to our overseas dominions and foreign countries.

SOCIETY OF CHEMICAL INDUSTRY REPORTS.

A bound volume is now issued annually by the Society showing the recent progress made in official chemistry in various branches of industry. As was the case in the volume for 1916, the chapter on rubber in the volume for 1917, which is now before me, is written by H. P. Stevens. Those in the manufacture who have had time to keep in touch with current literature in the trade journals and scientific publications will not find anything novel in Dr. Stevens' summary, though they cannot fail to find it very convenient as a reminder and a reference. Dr. Stevens, of course, is well known as an able experimenter and as a leading authority on plantation rubber, and it is this ground which is covered by his compilation. It seems somewhat doubtful whether chemistry, which has not got beyond the laboratory and

the scientific journal, is really entitled to be called applied chemistry. Perhaps, however, it may be argued that it is entitled to be called applied even in the embryonic stage while awaiting the stage at which the applicator comes forward with confidence. With regard to vulcanization, it is remarked that from various published papers it appears that there is no standard state of cure in manufacturing practice. When adjusting the condition of vulcanization time, heat, percentage of sulphur, accelerators, etc., the manufacturer has in mind the ultimate purpose for which the goods are required. There is, therefore, in practice no one optimum cure, but rather an optimum cure for each individual article. This expression of opinion will, I feel sure, be generally endorsed in the trade. It is stated that as regards vulcanization with niter-aromatic derivatives and organic peroxides it would appear that so far the results obtained are not comparable with a fully vulcanized rubber manufactured with sulphur as the vulcanizing agent. I do not suppose that this statement will cause much perturbation in the trade, as all work of importance lately has been done to strict government specifications which enjoin the use of sulphur. Items of progress which might fitly have found mention are the greatly extended use, both in America and Great Britain, of carbon black in the manufacture of solid goods and the fact that such black is now used in a dustless form which greatly facilitates its employment. The replacement of lime by magnesium oxide as a mineral accelerator, the substitution of zinc oxide by lithopone, and the recognition by government departments that there is no gain in buying an expensive rubber if a cheap one will answer the purpose equally as well, are other items of progress that seem to call for mention in a review of 1917.

MACINTOSH CABLE CO., LIMITED.

An amalgamation has been effected between William Rickard, Limited, electric cable manufacturer of Derby, and Macintosh Cable Co., Limited, of Rice Lane, Walton, Liverpool. The title of the new firm is the Macintosh Cable Co., Limited, with registered offices at Ashbourne Road Mills, Derby. Rubber and bitumen cables will be made at Derby, and paper-insulated, low-tension and extra high-tension cables at the Liverpool works. There is nothing very startling about this combination, as Chas. Macintosh & Co., Limited, had a business arrangement with Mr. Rickard for many years prior to taking over the two Liverpool rubber works for specializing in insulation and rubber boots and galoshes.

TRADE NOTES.

The retail shops seem rather anxious to get rid of their stocks in view of lower prices becoming general, though the importance to the purchaser of the reduced prices ticketed on the goods is more apparent than real. Thus, the label on a mackintosh shows the usual price to be 45 shillings; sale price, 30 shillings, or even lower, as the case may be. The usual price, however, is merely the fancy price that the dealer hoped to get out of a long-suffering public and does not represent any genuine business value. Although in the waterproofing line prices are bound to come down, and indeed have come down, these are retarded by the position of cloth. Cotton cloth is certainly down in view of the expected increased supplies of the raw material from America, but there has been no reduction affecting the cotton and wool which are so largely used in the waterproof garment trade; the price of these, in fact has gone up.

The further rise of 10 per cent in the price of pneumatic tires on top of the 10 per cent of last year is presumably due largely to the fabric, though it has been received with a good deal of grumbling among motorists.

A branch of the industry which has suffered eclipse during the war is that dealing with sports' requisites. Now that our national games are getting into full swing again, and the rubber works are no longer barred from putting labor onto non-essentials, this branch is becoming active again.

Somewhat late in the season galoshes, which have been very

scarce, are now appearing in the retailers' windows again. Under existing conditions our home producers have a more extended opportunity of doing business than they have had in the past and no doubt the six firms in the Rubber Shoe Manufacturers' Association will take full advantage of the situation. The chairman of this association is Alexander Johnston, of the North British Rubber Co., Limited, and in the course of a letter to the press correcting some misstatements which had gained publicity, he said that one firm alone in Britain was able to turn out 30,000 pairs of rubber shoes, boots, etc., per day. Presumably this is his own firm. The figure seems a huge one, though I believe it is exceeded by more than one American firm.

RUBBER GOODS IMPORTED INTO SOUTH AFRICA.

International competition for the South African market for all kinds of imported products has undergone remarkable changes since the middle of 1914. The following table shows how these changes affect the importation of manufactured rubber goods:

Country	1913	1917
United Kingdom	8,262,191	5,371,700
United States	2,760	151,843
Germany	2,008	
France	37,379	
Italy	52,882	
Totals, all countries	£24,533	£568,804

£1 equals \$4.8665 United States currency.

STRAITS SETTLEMENTS IMPORTS AND EXPORTS.

Reports of trade conditions in the Straits Settlements for the year 1917 show that, in spite of the war and the resulting limitations, the trade of the colony has increased yearly. This is attributed chiefly to the rubber industry which is the principal one in British Malaya, Singapore being today the world's greatest crude-rubber market. Other causes for good business are the favorable transportation facilities by the Pacific route and the demand in the United States and other countries for British Malayan products, in which rubber leads.

UNMANUFACTURED—	1916.		1917.	
	POUNDS.	VALUE.	POUNDS.	VALUE.
Inferior gutta	28,125,440	\$936,107	18,383,680	\$692,341
Gutta percha	3,074,240	\$54,250	3,214,400	\$65,005
Para rubber	18,144,000	7,981,067	21,884,800	9,955,706
Totals	48,343,680	\$9,271,424	43,482,880	\$11,293,052
MANUFACTURED	1916.		1917.	
	POUNDS.	VALUE.	POUNDS.	VALUE.
Rubber goods and tires		1,149,435		1,061,528
Totals	48,343,680	\$10,420,859	43,482,880	\$12,354,580

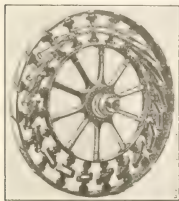
UNMANUFACTURED—	1916.		1917.	
	POUNDS.	VALUE.	POUNDS.	VALUE.
Inferior gutta	22,690,880	\$825,031	11,668,160	\$432,766
Gutta percha	5,771,480	840,191	8,783,040	1,557,328
Para rubber	132,867,840	74,308,447	216,366,080	118,447,759
Totals	160,730,200	\$75,970,659	236,817,280	\$120,437,853

FROM SINGAPORE—	1916.		1917.	
	POUNDS.	VALUE.	POUNDS.	VALUE.
Ielutong	20,855,126	\$1,001,078	10,108,209	\$487,969
Gutta percha	408,246	89,835	2,212,719	281,940
Gutta jankar			45,733	5,398
Gutta ciak	1,198,047	126,171	2,346,405	314,286
Gutta, untreated			764,169	51,950
Gutta, reboiled	280,416	36,241	304,659	30,008
Rubber:				
Borneo	11,588	1,855		
Para	92,332,048	\$1,322,061	167,742,830	87,232,774
Totals	115,175,471	\$52,577,231	183,524,724	\$88,788,325
FROM PENANG	1916.		1917.	
	POUNDS.	VALUE.	POUNDS.	VALUE.
Plantation rubber	9,909,738	\$5,645,857	25,474,672	\$14,103,396
Totals, all sources	125,085,209	\$82,223,088	208,999,396	\$102,892,261

It is predicted that the Straits Settlements will offer, after the war, an excellent market for industrial machinery, building materials, motor cars, trucks, and accessories, cotton goods, telephone and telegraph materials, boots and shoes, etc. Factors of importance in both the retention and expansion of this trade are good organization, personal representation in the field, and individual and continuous effort.

GERMAN SUBSTITUTES FOR RUBBER TIRES.

BEFORE the war, English, French and Americans were the inventors of and experimenters with spring wheels. When rubber became scarce in Germany, however, Teutonic imitative genius attempted to work out substitutes for both solid and pneumatic tires. Many types were produced, but of them all none were anywhere near the equal of the rubber tire. A European correspondent of The B. F. Goodrich Co., who has studied German spring wheels on the Western front, groups them as follows:



GERMAN DOUBLE RIM CONSTANT SPRING SUSPENSION WHEEL.



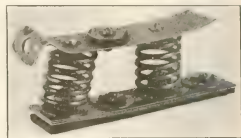
GERMAN DOUBLE RIM SPIRAL SPRING SUSPENSION WHEEL.

Group 1: (a) The spring wheel uses spiral springs wound from square steel and mounted radially in one or two rows between cups secured to the inner and outer wheels. There is a risk of the springs being displaced when running over obstacles or round corners, particularly, at more than moderate speed. (b) The Moll wheel is of similar construction, except that side plates are used to protect the springs from dirt, and telescopic tubes are used inside the springs to prevent lateral displacement. These tubes are extended as spherical end caps, which give the requisite degree of transverse flexibility. (c) The Fruth wheel uses a series of oval springs placed on their sides in troughs attached to the outer and inner rims. Bolts through the troughs pass through the overlapping loops of consecutive springs. The wheel is rather less flexible radially, since the springs are compressed in the plane of their winding instead of axially. One of the troughs

slides in the other, and so takes up transverse forces. The construction provides 'circumferential flexibility against accelerating and braking forces. The whole can be mounted as a unit in place of a rubber tire. (d) The Sievert wheel retains rubber or similar material for elasticity and uses a wood road rim. A rubber ring is held on each side of the fellos by through-bolts, which also secure steel side rings carrying the outer wood rim clear of the inner wheel. All wear comes on the wood rim, and the only connection between this and the inner wheel is through the rubber side rings. These are rather flexible and liable to side-slip. Group 2: (a) The Siemens and Halske wheel uses radially mounted spiral springs (imperfectly protected against dirt and transverse forces) and a

flexible outer rim. The outer rim is built up from strip steel wound to form a hoop. (b) The Flohr wheel is similar save that the outer rim has steel links (resembling link belting), the pins of which serve also to carry cups for the radial springs. The rim pins are exposed to dirt and moisture.

The section of a steel spring tire, shown herewith, was used on a German vehicle belonging to the personal messenger and bodyguard of Prince Eitel Friederich of Bavaria, and was sent to The B. F. Goodrich Rubber Co. by one of its former truck-tire salesmen, Captain August Barth, who is serving in France with the 303rd repair unit of the Motor Transport Corps of the Army.



SECTION OF GERMAN STEEL TIRE USED IN THE WAR.

In this tire spiral springs were mounted radially on the rim of the wheel and the tread comprised three plies of springs steel to which was bolted a heavy strip of leather. The tire was fairly satisfactory when the roads were good and the rate of speed moderate, but was practically useless when excessive speeds were called for, because the radially mounted spiral springs became easily misplaced when turning corners or when obstacles were encountered.

BARCELONA FIRM INCORPORATES.

On the first of October, 1918, the well-known firm of Tusell Brothers, rubber manufacturers, Barcelona, Spain, was dissolved and a new company incorporated, which will henceforth conduct its business as: *Fabricas Reunidas de Caucho y Apósitos Sociedad Anónima*. The new concern will continue to make mechanical rubber goods, hard rubber goods, druggists' and surgical sundries and sporting goods. The products of this company are sold under the trade marks: "La Hermana" and "Caracol." The officers of the company are: Matias Tusell, president; M. Alántara Gusart, treasurer; Juan Inglés, secretary; Jaiier Tusell, manager.

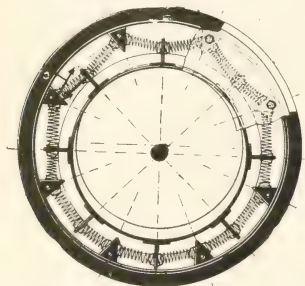
FOR BETTER AFRICAN RUBBER.

The Colonial Institute of Marseilles has just sent G. Van Pelt, Chief of its Rubber Service, on a mission to West Africa, with the object of establishing at the place of production a program of research to be carried out in connection with technical experiments which the Institute will make to determine the best methods for preparing African rubber.

Mr. Van Pelt will investigate particularly the cleaning of the raw rubber in order to determine whether this should be undertaken at the places of production or in the ports of shipping, or whether it is necessary to rely on the central installations established in France at the ports of entry. Mr. Van Pelt has carried with him the machinery necessary for these experiments and before his departure he completed a series of preliminary studies at the laboratories of the Institute, covering the principal objects of his investigations. The expense of this mission is borne by the *Compagnie Française de l'Afrique Occidentale* and the *Compagnie Commerciale de l'Ouest Africain*.

A PORT FOR SUMATRA'S EAST COAST.

Work will be started early this year at Belemar, on the East Coast of Sumatra, near Medan, to construct a harbor for ocean steamers drawing 30 feet, to be completed within three years, at a cost of \$4,000,000. It is estimated that shipments from this port will amount to about 125,000 tons a year, some 35,000 tons of which are expected to be rubber.



GERMAN SPRING SUSPENSION WHEEL.

and uses a wood road rim. A rubber ring is held on each side of the fellos by through-bolts, which also secure steel side rings carrying the outer wood rim clear of the inner wheel. All wear comes on the wood rim, and the only connection between this and the inner wheel is through the rubber side rings. These are rather flexible and liable to side-slip. Group 2: (a) The Siemens and Halske wheel uses radially mounted spiral springs (imperfectly protected against dirt and transverse forces) and a

Recent Patents Relating to Rubber.

THE UNITED STATES.

JANUARY 14, 1919.

- N** 1,290,887 Detachable rim for tires. J. W. Baker and J. S. Foley, Stonybridge, Eng.
- 1,290,888 Detachable rim for tires. H. Bretschger, New York City, assignor of one-half to Felix Spitzner.
- 1,290,900 Combined rubber and steel eraser for lead pencils. F. K. Butler, Seattle, Wash.
- 1,290,927 Improvements in air tires. W. H. de Fontaine, St. and Jrs., New York City.
- 1,290,979 Balloon, with inner vacuum chamber and controllable means for inflating inner chamber for purpose of descent, etc. P. T. Griffith, New York City.
- 1,291,150 Resilient tire. W. J. Robinson, Denver, Colo.
- 1,291,187 Tire-pressure gage. M. C. Schweinert, West Hoboken, N. J.
- 1,291,248 Improved tire armors. J. B. Zimudars, San Francisco, Calif. (Original application divided.)
- 1,291,346 Improvements in pneumatic tires. J. B. Zimudars, San Francisco, Calif. (Original application divided.)
- 1,291,537 Detachable tire rim. J. H. Jones, Covington, Ky.
- 1,291,554 Carbonator with perforated rubber disk for admitting minute streams of gas into receptacle for liquid. A. L. Koenig, Evansville, Ind. (Continued from No. 1,291,411, Chicago, Ill.)
- 1,291,639 Arch support for shoes. T. Coffey, West Tulsa, Okla.
- 1,291,648 Life-saving garment. E. M. Lowy, assignor to Lowy Life Saving Suit Co.—both of New York City.
- 1,291,649 Life-saving garment. E. M. Lowy, assignor to Lowy Life Saving Suit Co.—both of New York City.
- 1,291,650 Life-saving garment. E. M. Lowy, assignor to Lowy Life Saving Suit Co.—both of New York City.
- 1,291,676 Pneumatic tire structure, combining a pneumatic tire with a rib, having a soft section for wheel. J. R. Gammeter, Vicksburg, Miss. (Assigned to The B. F. Goodrich Co., New York City.)
- JANUARY 21, 1919.**
- 1,291,707 Resilient wheel. B. Baylis, St. Louis, Mo.
- 1,291,739 Name stamp for rubbers. A. C. Booth, Boringdon, Nt.
- 1,291,835 Fountain-pen blotter. J. Goldstein, West Hazleton, Pa.
- 1,291,896 Detachable rim for tires. J. I. and C. C. Hruby, St. Joseph, Mo.
- 1,291,930 Detachable rim for pneumatic tires. M. B. Kerman, Washington, D. C.
- 1,291,948 Inner tubular support for pneumatic tires, molded from plastic, unvulcanized rubber. J. T. Lister, near Wellington, O.
- 1,291,972 Soft rubber sleeve for attaching to pencils and penholders. M. J. McGugin, Ashland, Wis.
- 1,291,973 Toy balloon. H. Mard, New York City.
- 1,291,992 Respirator garment-supporter. I. Phillips, Brookline, Mass.
- 1,292,007 Reproductor. W. Soderling, New York City.
- 1,292,100 Concave rolled suction-cup heel. E. D. Stalford, Baltimore, Md.
- 1,292,139 Detachable rim for tires. G. L. Summers, Huntington, W. Va.
- 1,292,161 Resilient tire. J. R. Valdes, Key West, Fla.
- 1,292,209 Cushioned wheel. F. A. Frommann, Chicago, Ill.
- 1,292,300 Cushion tire. F. A. Frommann, Chicago, Ill.
- 1,292,345 Cushion tire. W. C. Martin, assignor by direct and mesne assignments to Morand Bros-Marion Cushman Wheel Co.—both of Chicago, Ill.
- 1,292,357 Resilient wheel. V. H. Nalinne, Brussels, Belgium.
- 1,292,360 Rubber heel. F. A. Nolen, St. Paul, Minn.
- 1,292,405 Pneumatic tire. L. Loeb, New York City.

JANUARY 28, 1919.

- 1,292,504 Wheel with demountable and permanent rims for tires. G. A. Mitchell, assignor of one-half to H. A. Gilbert—both of Aberdeen, Md.
- 1,292,519 Puncture-proof tread-block for pneumatic tires. A. Rosenberg and A. H. Rosenthal, Brooklyn, N. Y.
- 1,292,524 Device for connecting hose to faucets of varying size. L. W. Serrell, Plainfield, N. J.
- 1,292,564 Fastener for cushion tires on clincher rims. T. Barnes, assignor to Barnes Cushion Tire Co.—both of Denver, Colo.
- 1,292,587 Life-preserver with inflatable portions. D. Del Re, Iron River, Mich.
- 1,292,596 Stay-fastener for balloons. J. R. Gammeter, Akron, O., and J. Bourgeois, Billancourt, France, assignors to The B. F. Goodrich Co., New York City.
- 1,292,601 Combination wheel and demountable rim. L. B. Harvey, assignor to Interlocking Auto Rim Co.—both of Stockton, Calif.
- 1,292,600 Hot-water and ice-bag closure. J. J. Bowes, Jr., Pensacola, Fla.
- 1,292,736 Fountain pen. A. G. Elmer, assignor to C. E. Barrett—both of Chicago, Ill.
- 1,292,826 Reinforced tread for automobile tires. J. F. Loughran, Chelalis, Wash.
- 1,292,985 Collapsible demountable rim for tires. E. H. Wulff, Toledo, O.
- 1,292,991 Tire casing. L. A. Page, Providence, R. I.

ISSUED FEBRUARY 4, 1919.

- 1,293,063 Rubber stamp with a cap on the stem and its upper portion folded over on itself. J. J. Batterman, assignor to Patterman Rubber Co.—both of Boston, Mass.
- 1,293,015 Demountable rim for vehicle wheels. B. E. Braucht, Cartwright, N. D.
- 1,293,089 Shoulder and body brace. W. D. Hardy, New York City.
- 1,293,158 C. W. Miffler, Jersey City, N. J.
- 1,293,221 Veil with elastic cord in edge. I. Silverberg, Far Rockaway, N. Y., assignor to Silverberg Import Co., Inc., New York City.
- 1,293,283 Demountable rim for vehicle wheels. C. C. Wolf, assignor of one-half to A. Bournemann—both of Morrison, Wis.
- 1,293,337 Rubber-soled canvas shoe. M. H. Clark, Hastings-upon-Hudson, N. Y., assignor to The Goodyear's Metallic Rubber Shoe Co., Neauquah, Conn.
- 1,293,427 Corset with elastic inserts. J. E. Heilner, New York City.
- 1,293,473 Resilient tire. J. H. Krall, Portland, Ore.
- 1,293,498 Pneumatic tire. P. Marino, Brooklyn, N. Y., assignor of one-third to C. Marino, Brooklyn, N. Y., and one-third to D. Marino, West Hoboken, N. J.
- 1,293,528 Pneumatic tire in combination with means for making it wider than deep, restricting radial distortion, etc. J. F. Palmer, Riverside, Ill.
- 1,293,558 Cushion wheel. M. S. Schwartz, Brooklyn, N. Y.
- 1,293,645 Waterproof hat-covering. L. Henschel, New York City.

THE DOMINION OF CANADA.

ISSUED JANUARY 7, 1919.

- 188,138 Sound deadener composed of composite sheet material comprising a metallic sheet and alternate sheets of asbestos and rubber composition, contacted by pressure and vulcanized. The Canadian Consolidated Rubber Co., Limited, Montreal, Que., assignee of N. D. Crawford, Elizabeth, N. J., U. S. A.
- 188,149 Collapsible basket. The Tire Tire Labeled Co., Wilmington, assignee of G. J. E. H. Holly Oak, both in Del., U. S. A.

ISSUED JANUARY 14, 1919.

- 188,233 Pneumatic tire and wheel. W. J. Vincent, Cardiff, Wales.

ISSUED JANUARY 21, 1919.

- 188,310 Resilient tire. W. A. Anglemier, Indianapolis, Ind., U. S. A.
- 188,352 Gasket for automobile couplings. J. W. Southern, Vancouver, B. C.

ISSUED JANUARY 28, 1919.

- 188,461 Tire casing. W. Kline, Lake, and J. P. Frisby, Akron, assignee of 1/2 interest—both in Ohio, U. S. A.
- 188,463 Fountain-pen filler. J. J. Garman, assignee of F. Riesenber—both of New York City, U. S. A.

ISSUED FEBRUARY 11, 1919.

- 188,668 Golf ball. E. Miller, London, England.
- 188,697 Bath mat. L. D. Tolley, Algiers, La., U. S. A.
- 188,700 Trousers support. W. Haake, West Hoboken, N. J., U. S. A.
- 188,702 Device for removing bulbs from electric lamps. H. D. Grinnell, Pittsfield, Mass., U. S. A.

ISSUED FEBRUARY 25, 1919.

- 188,883 Pressure gage. A. Schrader's Son, Inc., New York City, assignee of W. A. Allen, Yonkers—both in N. Y., U. S. A.

ISSUED MARCH 4, 1919.

- 188,905 Demountable rim for tires. E. G. Budd, Philadelphia, Pa.
- 188,969 Stopper for hot-water bottle. H. P. Kraft, Ridgewood, N. Y.

THE UNITED KINGDOM.

ISSUED FEBRUARY 5, 1919.

- 121,244 Detachable wearing surface for the soles of rubber and rubber-soled footwear. J. H. Gill and I. D. Rea, Hase street, Dunedin, New Zealand.
- 121,411 Pneumatic tires with beaded edges comprising hard-rubber cores having wire embedded therein. G. H. Thomas, 27 Buckingham Gate, and E. J. Edgar, 16 Teignmouth Road, Brompton, London, W., England.
- 121,443 Kneeling pad with inflatable cushion. E. M. Hamilton, 10 Chester Crescent, Newcastle-on-Tyne.

ISSUED FEBRUARY 12, 1919.

- 9,956 Valves for automobile tires. R. Donald, 30 Parliament Hill, Montreal, Quebec, Canada. (Not yet accepted.)
- 121,495 Electrically heated electric foot-warmers, etc. A. A. Lomax, 127 Avenue de la Gare, Paris.
- 121,538 Rubber coated tire. J. D. Drury, 24 Norfolk Row, Sheffield.

ISSUED FEBRUARY 19, 1919.

- 121,634 Waterproof soles for boots, etc. E. S. Frizzoni, 24 Via Mantova, 20, Milan, Italy.
- 121,657 Garment for armors. R. H. Davis, 187 Westminster Bridge Road, Westminster.
- 121,703 Rubber horsehooves. F. Kuski, 410 West 56th street, New York City, U. S. A.
- 1,17,706 Soles with staggered members, for boots, etc. A. G. Knight, 9 Mount Noad Road, Streatham Hill, London.

ISSUED FEBRUARY 26 1919.

- 121,726. Improvements in tire tubes. W. Chasley, 266 High street, Southwark, Standardized.
- 121,829. Mattress with aperture to receive hot-water bottle. J. Hill, 74 Townsend street, Boston.
- 121,838. Rolling compound for automobile and others, to operate like msh. R. C. Johnson, to Kaskadee Road, Lexington, Ind. 400.
- 121,841. Rubber cap for crutchpins, etc. M. Lynch, 43 Amherst Road, Wiltshire, Manchester.
- 121,843. Horseshoe with rubber pad. B. Tattersall, Hey Houses, and J. Lawrence, Montauban, Clifton Drive—both of St. Anne's-on-the-Sea, Lancashire.
- 121,845. Watch wristlet composed of rubber band, etc. C. J. Keep, 33 Lanark Villas, Malda Vale, London.

SWITZERLAND.
NOVEMBER 16, 1918.

- 80,157. Tire support for automobile wheels. Edward Downing, 637 Turk street, San Francisco, Calif., U. S. A. (E. Imer-Schneider, Geneva.) Priorities U. S. A., February 21 and December 1, 1916, and January 2, 1917.
- 80,201. Arch support for shoes. Erich Schenk, 466 Washington street, Newark, N. J. (Fritz Isler, Zurich.) Priority U. S. A., October 16, 1917.

INDIA.

(PATENTS ISSUED, WITH DATES OF APPLICATION.)

- 3,711. (June 11, 1918.) Improvements in resilient wheels for motor cars and other vehicles. A. A. Crozier.
- 3,758. (July 12, 1918.) Improvements in rubber heels. C. V. Chamberlain.
- 3,807. (July 29, 1918.) Improvements in rubber tires. E. B. Killen.
- 3,899. (September 23, 1918.) Rubber seed-removing knife. V. Marston.

NEW ZEALAND.

ISSUED DECEMBER 31, 1918.

- 40,634. Chair's comforter. H. S. Briggs, 92 Toorak Road, South Yarra, Victoria, Australia.

THE FRENCH REPUBLIC.

PATENTS ISSUED (WITH DATES OF APPLICATION.)

- 487,984. (December 14, 1917.) Dust caps for valves of pneumatic tires. A. Schrader's Son, Inc., Brooklyn, N. Y., U. S. A.
- 487,964. (December 12, 1917.) Device for the treatment of invalids by air. J. Clares.
- 488,120. (December 22, 1917.) Pneumatic camp bed. L. Avoirio.
- 488,371. (January 3, 1918.) Apparatus for chloroform anesthesia. G. E. Brochet, 4 rue de la Grande Chaumière, Paris.
- 488,448. (October 5, 1915.) Improvements in dirigibles. W. M. Webber.
- 488,557. (May 22, 1916.) Metallic and resilient wheel. A. E. Jourier, 90 rue St. Alexandre, Bédieraux (Hérault), Paris.
- 488,923. (February 15, 1918.) Improvements in vehicle wheels. A. W. Benjamin.
- 488,945. (February 16, 1918.) Improved resilient wheel. J. Stuart.
- 488,974. (April 20, 1917.) Soles and patterns of leather and rubber for shoes. Société Française du Chir. Armé.
- 489,043. (February 26, 1918.) Improvement in vehicle wheels. W. Brown.

TRADE MARKS.

THE UNITED STATES.

- N O. 86,953. The word *FOOT* in fancy script letters—rubber tires. F. M. Moton Co., Highland Park, Mich.
- 107,748. The word *COR* with or without shield-shaped waterproof body-protectors. Albert Nathan, Glen Cove, N. Y.
- 108,029. Representation of head of Eastern wizard holding arch-support in hands, inserting pad—appliances for correcting foot deformities. Wizard Foot Appliance Co., St. Louis, Mo.
- 108,164. The word *STAR* in black letters superimposed on a black star—pneumatic and solid tires and tire patches, liner, and tread band. The Rubber Co., Akron, O.
- 113,702. The word *RUSSELL* within an oval—woven machinery belts. The Russell Manufacturing Co., Middletown, Conn.
- 113,705. The word *STANDBY* above a four-leaved clover within an oval formed by a tied cable cord—astobes and rubber packing. James H. Taylor, Baltimore, Md.
- 113,863. The initials *M. P. C.*—puncture-sealing compounds for pneumatic tires. D. S. Mumphy, New Orleans, La.
- 113,892. The representation of a man walking with his fingers in his ears—rubber heels.
- 113,920. The representation of Uncle Sam seizing the Kaiser from behind above the words *YANKEE GRIP*—fabric and rubber tire patches. W. M. Prince, Tacoma, Wash.
- 114,142. The word *SWEETIE* in fancy script letters—rubber dolls. The Faultless Rubber Co., Ashland, O.
- 114,272. The representation of a little girl mending a tire puncture—puncture-curing compound for pneumatic tires. J. Mangus, Beatrice, Neb.

THE DOMINION OF CANADA.

- 23,990. The words *KOLD PROSSO*—fruit-jar rubbers. Smalley, Kivian & Onthank, Boston, Mass., U. S. A.
- 24,105. The words *ROYAL CORB*—automobile tires. The Canadian Consolidated Rubber Co., Limited, Montreal, Que.

- 113,706. The word *TRIARCLIFF*—automobile tires, tubes, etc. Van der Linde Rubber Co., Limited, Toronto, Ont.
- 24,125. The word *ECONOMY*—tires or rubber goods not including footwear. The United Rubber Manufacturing and Reclaiming Co., Limited, Toronto, Ont.
- 24,128. The words *VULCO-COR*—belts, especially for automobile fans and generator driving. The Gates Rubber Co., Denver, Colo., U. S. A.
- 24,130. The word *PARAKNIT*—corsets, elastic girdles, hose and abdomen supporters, hip confiners and brassieres. Treo Co., Inc., New York City, U. S. A.
- 24,172. The word *CAMACHINE*—rubber, rewinding, cutting and perforating machines and parts therefor. Cameron Machine Co., Brooklyn, N. Y., U. S. A.
- 24,259. The words *BARBELED SUNLIGHT* surrounded by rays and enclosed in a rectangular frame of all kinds. United States Gutta Percha Paint Co., Providence, R. I., U. S. A.

THE UNITED KINGDOM.

- 282,156. The word *TENAX*—compositions not included in classes other than No. 40, of which india rubber is the predominating ingredient. Gutta Percha and Rubber, Limited, 47, Young street, Toronto, Ontario, Canada. (Care of Labor, Wise & Co., 10 New Court, Lincoln's Inn London, W. C. 2, England.)
- 282,255. The representation of a tire through which is thrust a rubber-shield band holding a spatula—all goods included in Class 40. The Miller Rubber Co., 1269 South High street, Akron, Ohio, U. S. A. (Care of Marks & Clerk, 57 Lincoln's Inn Fields, London, W. C. 2, England.)
- 283,314. The words *BALL-BAND*—boots and shoes of rubber, rubber and wool, etc. Mishawaka Woolen Manufacturing Co., Hill and Water streets, Mishawaka, Indiana, U. S. A. (Care Marks & Clerk, 57 Lincoln's Inn Fields, London, W. C. 2, England.)

FOREIGN TRADE MARKS GRANTED TO AMERICANS.

SPAIN.

- 33,005. The word *NIFFLEK* within an oval—waterproof fabrics for automobile and carriage tops. F. S. Carr Co., Boston, Mass., U. S. A.

AUSTRALIA.

- 23,780. The words *PENNSYLVANIA VACUUM CUP* preceded and followed by the letters *V* and *C* forming a monogram—rubber tires. Pennsylvania Rubber Co., Jeannette, Pa., U. S. A. (W. J. Spruson, Daily Telegraph Building, King street, Sydney, Australia.)
- 23,821. The word *PRESERVE* in black letters outlined with white against a black background within a geometric figure—a compound for waterproofing cotton duck, etc. Roberson Preserve Products Co., 25 White Block, Fort Huron, Mich., U. S. A. (Sidney Hendley, Fink's Buildings, Elizabeth street, Melbourne, Australia.)

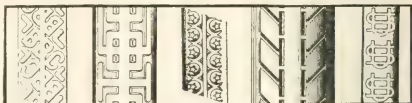
THE FRENCH REPUBLIC.

- 25,745. The word *RAYBESTOS*—shoes and linings for vehicle brakes. Raybestos Co., Bridgeport, Conn., U. S. A.

DESIGNS.

THE UNITED STATES.

- N O. 52,868. Fountain pen. Patented January 14, 1919. Term 14 years. W. T. Fitzpatrick, Waterloo, Ia.
- 52,893. Tire. Patented January 14, 1919. Term 14 years. J. W. McGuire, assignor to The Brunswick-Balke-Collender Co.—both of Chicago, Ill.
- 52,899. Tire. Patented January 14, 1919. Term 14 years. C. S. Park, assignor to The McGraw Tire & Rubber Co.—both of East Palestine, O.



52,893. 52,899. 52,959. 52,962. 52,975.

- 52,959. Tire. Patented February 4, 1919. Term 14 years. W. A. Miller, Columbus, O.
- 52,962. Tire. Patented February 4, 1919. Term 7 years. A. L. Pashek, Newark, N. J.
- 52,975. Tire. Patented February 4, 1919. Term 14 years. C. B. Whiteley, Hartford, Conn., assignor to United States Tire Co., New York City.
- 52,974. Liquid-spraying instrument. T. A. De Vilbiss, assignor to The De Vilbiss Manufacturing Co.—both of Toledo, O. Patented February 4, 1919. Term 14 years.

THE DOMINION OF CANADA.

- 4,514. Tire tread. Registered January 7, 1919. Term 18 years. The Canadian Consolidated Rubber Co., Limited, Montreal, Que.

Review of the Crude Rubber Market.

NEW YORK.

THE active dealers' demand, in evidence the last of February, for near-by plantation rubber to cover short sales gave strength to the market for an advance. On the first of March first latex spot was quoted at 55½-56 and upriver fine Pará at 58½ with very little demand. During the entire month buyers have displayed little or no interest in the market which sank into a state of practical stagnation with slowly falling quotations reaching 51 for first latex and 55½ for upriver fine.

The outlook is still favorable to buyers whose needs, however, are not urgent because of the prevailing industrial uncertainties.

The course of the market quotations on plantations and Pará during the month were as follows:

PLANTATIONS.—March 4, spot latex crêpe, 55 cents; March arrivals, 54 cents; May to June arrivals, 50½ cents; July to December arrivals, 50 cents. On March 20 the prices were: spot, 52 cents; March arrivals, 51½ cents; May arrivals, 51 cents; June arrivals, 50½ cents.

March 4, spot ribs, 54 cents; spot, c. i. f. Pacific Coast, 50½ cents; April arrivals, 52 cents; May-July arrivals, 50½ cents. March 20, 51 cents; April arrivals, 50½ cents; May arrivals, 50 cents; June arrivals, 49½ cents.

March 4, No. 1 amber gristly crêpe was quoted at 51½ cents for near-by and 47 cents for July to December arrivals. March 20, April to June arrivals were quoted at 47½ cents, and July to December arrivals at 46 cents.

March 4, No. 1 roll brown crêpe, spot, sold for 36½ cents; July to December arrivals, at 32 cents. On March 20 these prices had declined to 35½ cents and 31 cents, respectively.

PARÁS.—March 4, upriver fine, spot, was 58 cents; islands fine March-April, 47½ cents; upriver coarse, spot 34½ cents; cameté, coarse, March-May, 22 cents.

March 20, upriver fine, spot, was 56 cents; upriver coarse, spot, 34½ cents, and April-June, 34 cents.

NEW YORK QUOTATIONS.

Following are the New York spot quotations, one year ago, one month ago and on March 26, the current date:

	Apr. 1, 1918.	Mar. 1, 1919.	Mar. 26, 1919.
PLANTATION HEVEA—			
First latex crêpe, 100 lb.	54 @ 55	49 @ 49½	48 @
*Hevea first crêpe, 100 lb.	54 @ 55	49 @ 49½	48 @
Amber crêpe No. 1, 100 lb.	52 @	48 @ 48½	47 @
Amber crêpe No. 2, 100 lb.	51 @	47 @ 47½	46 @
Amber crêpe No. 3, 100 lb.	50 @	45 @ 45½	45 @
Brown crêpe, 100 lb.	49 @	46 @ 46½	45 @
Brown crêpe, thick clean, 100 lb.	49 @	46 @	46 @
Brown crêpe, thin speckly, 100 lb.	48 @	44 @ 45	43 @
Brown crêpe, rolled, 100 lb.	48 @	47 @ 48	45 @
Smoked sheet, ribbed, 100 lb.	60 @	54 @ 55	50 @
*Hevea standard quality, smoked sheet, 100 lb.	60 @	54 @ 55	50 @
Smoked sheet, plain standard quality, 100 lb.	58 @	52 @ 54	48 @
*Hevea plain or smooth smoked sheet, 100 lb.	58 @	52 @ 54	48 @
Unsmoked sheet, standard quality, 100 lb.	56 @	53 @	49 @
*Hevea unsmoked sheet, 100 lb.	37 @	38 @	@
Colombo scrap No. 1, 100 lb.	35 @	37 @	@
Colombo scrap No. 2, 100 lb.	35 @	37 @	@
BRAZILIAN PARÁS—			
Upriver fine, 100 lb.	60 @	58 @	56 @
Upriver medium, 100 lb.	54 @	53 @	51 @
Upriver coarse, 100 lb.	54 @	53 @	51 @
Upriver weak fine, 100 lb.	46 @	45 @	44 @
Upriver caucho ball, 100 lb.	44 @	44 @	43 @
Islands fine, 100 lb.	48 @	49 @	48 @
Islands medium, 100 lb.	44 @	44 @	43 @
Islands coarse, 100 lb.	44 @	21 @	**22 @
Cameté, coarse, 100 lb.	38 @	30 @	**23 @
Lower caucho ball, 100 lb.	32 @	32 @	31 @
Peruvian fine, 100 lb.	35 @	35 @	33 @
Tapajós fine, 100 lb.	55 @	55 @	53 @

	Apr. 1, 1918.	Mar. 1, 1919.	Mar. 26, 1919.
AFRICANS—			
Niger slabs, prime, 100 lb.	47 @	44 @	@
Benin, extra No. 1, 28%	47 @	@	@
Benin, No. 2, 28%	47 @	@	@
Conco prime, black upper	48 @	45 @	@
Congo prime, red upper	48 @	@	@
Rio Nunez, black upper	46 @	@	@
Rio Nunez, red upper	@	@	@
Guayule, 20% guaranteed	@	33 @ 34	@
Massai sheets and strings...	@	@	@
CENTRALS—			
Cenozo scrap, 100 lb.	35 @ 36	36 @ 37	33½ @ 34
Emeralda sausage, 100 lb.	35 @ 36	36 @	33½ @ 34
Central scrap, 100 lb.	35 @ 36	36 @	33½ @ 34
Central scrap and strip, 75%	34 @	33 @	33½ @
Central wet sheet, 25%	31 @	24 @ 25	23 @
Guayule, 20% guaranteed	@	33 @ 34	@
Guayule, dry	@	40 @	40 @
MANICOBAS—			
Cenozo, near heads, 100 lb.	@	@	@
Cenozo scrap, 100 lb.	@	@	@
Manicoba, black (loss)	41 @	37 @ 38	34 @
washing and drying	@	@	@
Manicoba, thin sheet, 100 lb.	36 @	40 @ 41	38 @
EAST INDIAN—			
Assam crêpe, 100 lb.	48 @	@	@
Assam onions, 100 lb.	48 @	@	@
Penang black scrap, 100 lb.	38 @	38 @	@
BALATA—			
Black, Ciudad Bolivar, 100 lb.	**72 @	71 @ 72	76 @
Colombia, 100 lb.	58 @	60 @ 61	58 @
Panama, 100 lb.	53 @	56 @	56 @
Surinam sheet, 100 lb.	85 @ 86	88 @	96 @
amber, 100 lb.	**97 @	90 @	98 @
PONTIANAK—			
Banjerassin, 100 lb.	13½ @ 14	13½ @	13½ @
Palembang, 100 lb.	@	@	@
Pressad block, 100 lb.	21 @ 22	19 @	20 @
Sarawak, 100 lb.	@	@	@
GUTTA PERCHA—			
Gutta, Siak, 100 lb.	21 @ 22	20 @	23 @
Red Macassar, 100 lb.	2.25 @ 2.50	2.50 @ 3.00	3.00 @

*Rubber Association of America nomenclature.

**Nominal.

RECLAIMED RUBBER.

The anticipated demand for reclaimed rubber mentioned last month has begun to materialize under the stimulation of a distinct easing up in prices on all grades of reclaimed except red, which remains fixed. The market, however, is not active and the reclaiming mills are still operating on part time. The sentiment of the reclaimers grows more hopeful with the approach of peace and resumption of general industrial activity.

NEW YORK QUOTATIONS.

MARCH 26, 1919.

Subject to change without notice.

Standard Reclaims.			
Bluebonnet, 100 lb.	30 @ 35		
French, 100 lb.	11 @ 12		
Shore, 100 lb.	20 @ 25		
Red, 100 lb.	14½ @ 15		
Time, 100 lb.	16½ @ 17½		
White, 100 lb.	22 @ 24		

COMPARATIVE HIGH AND LOW SPOT RUBBER PRICES.

	1919.	1918.	1917.
PLANTATIONS.			
First latex crêpe, 100 lb.	\$0.50 @ 0.51	\$0.54 @ 0.55	\$0.76 @ 0.73
Smoked sheet, ribbed, 100 lb.	50 @ 51	54 @ 55	76 @ 73
PARÁS.			
Upriver fine, 100 lb.	58½ @ 55½	61 @ 56	81 @ 76
Upriver medium, 100 lb.	54 @ 53	53 @ 51	54 @ 51
Islands, 100 lb.	48 @ 47½	49 @ 46	75 @ 73
Islands, coarse, 100 lb.	44 @ 43	44 @ 43	58 @ 54
Cameté, 100 lb.	38 @ 37	38 @ 37	40 @ 37

*Figured only to March 26.

CRUDE RUBBER ARRIVALS AT THE PORT OF
NEW YORK.

The following statistics are not complete, due to government orders prohibiting access to the records.

WEEKLY RUBBER REPORT.

GUTHRIE & CO., LIMITED, Singapore, report [January 30, 1919]

CRUDE RUBBER ARRIVALS AT NEW YORK AND
PACIFIC PORTS AS REPORTED.

PLANTATIONS

	Arrived	Shipped to	Pounds.
DECEMBER 26, 1918, S. S. <i>Hoah Maru</i>	San Francisco	New York	156,800
Adolph Hirsch & Co., Inc., Colombia			
JANUARY 24, 1919, S. S. <i>Shimpu Maru</i>	San Francisco	New York	134,400
Wm. H. Stiles & Co., Inc., Singapore			
FEBRUARY 1, 1919, S. S. <i>Shimpu Maru</i>	San Francisco	New York	133,600
Wm. H. Stiles & Co., Inc., Batavia			
FEBRUARY 1, 1919, S. S. <i>Shimpu Maru</i>	San Francisco	New York	133,600
Wm. H. Stiles & Co., Inc., Singapore			
L. Littlejohn & Co., Inc., Far East			589,400
Total			738,000
FEBRUARY 1, 1919, S. S. <i>Shimpu Maru</i>	San Francisco	New York	158,600
L. Littlejohn & Co., Inc., Far East			
FEBRUARY 1, 1919, S. S. <i>Shimpu Maru</i>	San Francisco	New York	153,600
L. Littlejohn & Co., Inc., Colombia			
FEBRUARY 1, 1919, S. S. <i>Shimpu Maru</i>	San Francisco	New York	38,000
Wm. H. Stiles & Co., Inc., Batavia			
March 1, 1919, S. S. <i>Shimpu Maru</i>	San Francisco	New York	134,800
L. Littlejohn & Co., Inc., Far East			179,200
March 1, 1919, S. S. <i>Shimpu Maru</i>	San Francisco	New York	22,400
Co., Ltd., Singapore			
Total			383,260

FEBRUARY 12, S. S. Koon				
Wm. H. Stiles & Co., Sing.	Sing.	Seattle	New York	22,400
Aldens' Successors, Ltd., Sing.	Sing.	Seattle	New York	4,482
L. Littlejohn & Co., Inc., Far	Far	Seattle	New York	448,000

Total	474,882
Wm. H. Stiles & Co., Singapore	145,600
Aldens' Successors, Ltd., Singapore	32,494
L. Littlejohn & Co., Inc., Singapore	975,600
Fred Stern & Co., Singapore	40,320

Aldens' Successors, Ltd., Yokohama Nat. Bank, New York 91,815

1	Lithotholm & Co., Inc., London, New York	New York	133,699
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Rubber Trading Co., Inc., Singapore	Seattle	New York	48,800
Albers' Successors, Ltd., London	Seattle	New York	38,200
		New York	33,600

Fred. Stern & Co., Inc., Eastman	Seattle	New York	35,000
Wm. H. Stiles & Co., Sonoma	Seattle	New York	20,000

Total	140,760
Percentage	100.00

Aldens' Successors, Ltd., Liverpool	New York	New York	62-63
Aldens' Successors, Ltd., San Francisco	San Francisco	New York	62-63

Aldens' Successors, Ltd., Yokohama	San Francisco	New York	44,800
Aldens' Successors, Ltd., Yokohama	San Francisco	New York	44,800

MARCH 3, S. S. Easterling, Tyndall, Alaska, 1900. *Wetmore*
J. T. Johnstone & Co., Singapore, Seattle, New York 14, 1900

Wm. H. Stiles & Co., Inc.	New York	14,800
Wm. H. Stiles & Co., Inc.	New York	200,740

Total	344,549
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L. Littlejohn & Co., Inc., 1 Madison	New York	New York	79,588
1 Broadway	New York	New York	505,46

Total	1,296,351
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MARCH 3. S. S. <i>Lapland</i> . Aldens' Successors, Ltd., Liverpool	New York	New York	229.679
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Messrs. J. & S. Badger	New York	New York	123,372
Aldens' Successors, Ltd., Liverpool			

MARCH 4. S. S. <i>Grayson</i> .				
J. T. Johnstone & Co., Singapore	Seattle	New York	25,650	

L. Littlejohn & Co., Inc., Far East	Seattle	New York	56,000
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EXPORTS OF CEYLON GROWN RUBBER

EXPORTS DURING PAST TEN YEARS.

1918	47,219,128	Totals 1913	25,433,551
	71,331,600	1912	18,001,075
	54,965,700	1911	7,154,658
1915	46,566,187	1910	3,586,854
	40,425,260	1909	1,492,581

These figures include cargoes for transshipment to New Zealand, other

PLANTATION RUBBER EXPORTS FROM JAVA.

	October 1		Ten Months Ended October 31	
	1947	1948	1947	1948
Total	5,000	137,000	2,193,000	1,659,000
From Batavia	26,000	243,000	1,318,000	6,718,000
Other counts	5,000	24,000	1,287,000	—
Totals	31,000	656,000	15,905,000	14,868,000
From Batavia	500,000	332,000	9,284,000	7,839,000
Samarang	—	—	191,000	129,000
Seerabaya	500,000	319,000	6,611,000	6,668,000
Other ports	1,000	—	239,000	232,000
Totals	1,001,000	656,000	15,905,000	14,868,000

1. *Journal of the American Library Association* : supplies those given in THE INDEX TO THE WORLD
 MARSHALL, 1979.

	November				Liquor Month's End	
	November 30				November 30	
	1947	1948	1947	1948	1947	1948
TOTAL ASSETS	1,238,000	876,000	1,714,000	1,574,000	1,238,000	1,574,000
United States	316,000	306,000	3,316,000	5,216,000	316,000	5,216,000
Singapore	1,000	460,000	1,584,000	2,780,000	1,000	2,780,000
Other countries	110,000	100,000	830,000	1,578,000	110,000	1,578,000
LIABILITIES	1,238,000	876,000	1,714,000	1,574,000	1,238,000	1,574,000
United States	636,000	491,000	9,989,000	8,331,000	636,000	8,331,000
Singapore	9,000	2,000	200,000	132,000	9,000	132,000
Other countries	593,000	289,000	6,755,000	6,987,000	593,000	6,987,000
Capital	1,000	94,000	241,000	324,000	1,000	324,000
LIABILITIES	1,238,000	876,000	1,714,000	1,574,000	1,238,000	1,574,000

Shipment from	Arrived at	Shipped to	Pounds.
MARCH 5, S. S. <i>Neosho</i> , L. Littlejohn & Co., Inc., Far East	Seattle	New York	112,000
MARCH 5, S. S. <i>Cyclone</i> , L. Littlejohn & Co., Inc., Far East	Seattle	New York	627,200
Fred Stern & Co., Inc., Far East	Seattle	New York	125,440
Aldens' Successors, Ltd., Yokohama	Seattle	New York	173,600
Total			926,240
MARCH 10, S. S. <i>Neosho</i> , L. Littlejohn & Co., Inc., Far East	New York	New York	136,655
MARCH 11, S. S. <i>London</i> , J. T. Johnstone & Co., Inc., Hull	New York	New York	64,664
MARCH 13, S. S. <i>London</i> , Wm. H. Stiles & Co., Inc., London	New York	New York	16,600
L. Littlejohn & Co., Inc., London	New York	New York	656,592
Fred Stern & Co., Inc., London	New York	New York	5,600
Total			678,192
MARCH 13, S. S. <i>Kamo</i> , J. T. Johnstone & Co., Inc., London	New York	New York	41,888
United Malaysian Rubber Co., Limited, Singapore	New York	New York	529,600
Total			571,488
MARCH 14, S. S. <i>London</i> , Meyer & Brown, Ltd., London	New York	New York	78,400
Wm. H. Stiles & Co., Inc., London	New York	New York	145,600
L. Littlejohn & Co., Inc., London	New York	New York	477,640
Aldens' Successors, Ltd., Liverpool	New York	New York	744,792
J. T. Johnstone & Co., Inc., London	New York	New York	124,560
Total			1,500,932
MARCH 15, S. S. <i>London</i> , L. Littlejohn & Co., Inc., London	New York	New York	795,653
MARCH 17, S. S. <i>Hull</i> , Meyer & Brown, Ltd., Singapore	San Francisco	New York	14,600
L. Littlejohn & Co., Inc., San Francisco	San Francisco	New York	78,400
Fred Stern & Co., Inc., San Francisco	San Francisco	New York	59,360
Aldens' Successors, Ltd., Yokohama	San Francisco	New York	42,560
Rubber Trading Co., Ltd., Singapore	San Francisco	New York	16,600
Total			250,920
MARCH 17, S. S. <i>London</i> , Meyer & Brown, Ltd., Liverpool	St. John's	New York	44,800
MARCH 18, S. S. <i>Tencho</i> , Wm. H. Stiles & Co., Inc., Singapore	Seattle	New York	380,000
L. Littlejohn & Co., Inc., Singapore	Seattle	New York	1,344,000
Meyer & Brown, Ltd., Singapore	Seattle	New York	201,600
Rubber Trading Co., Ltd., Singapore	Seattle	New York	112,000
General Rubber Co., Ltd., Singapore	Seattle	New York	136,340
United Malaysian Rubber Co., Limited, Singapore	Seattle	New York	112,000
Total			2,185,940
MARCH 19, S. S. <i>Neosho</i> , L. Littlejohn & Co., Inc., Colombo	New York	New York	93,464
United Malaysian Rubber Co., Limited, Colombo	New York	New York	201,600
Total			295,064
MARCH 21, S. S. <i>London</i> , L. Littlejohn & Co., Inc., San Francisco	New York	New York	24,648
MARCH 23, S. S. <i>London</i> , Aldens' Successors, Ltd., London	New York	New York	84,880

PONTIANAK.

FEBRUARY 21, S. S. <i>Neosho</i> , L. Littlejohn & Co., Inc., Singapore	Seattle	New York	533,164
FEBRUARY 25, S. S. <i>London</i> , The United Malaysian Rubber Co., Ltd., Singapore	Seattle	New York	112,000
FEBRUARY 25, S. S. <i>London</i> , The United Malaysian Rubber Co., Ltd., Singapore	Seattle	New York	112,000
MARCH 5, S. S. <i>Cyclone</i> , The United Malaysian Rubber Co., Ltd., Singapore	Seattle	New York	112,000
MARCH 17, S. S. <i>London</i> , L. Littlejohn & Co., Inc., Singapore	Seattle	New York	112,000
Total			869,164
MARCH 17, S. S. <i>London</i> , L. Littlejohn & Co., Inc., Singapore	Seattle	New York	112,000
Total			981,164

GUTTA PERCHA.

FEBRUARY 21, S. S. <i>Neosho</i> , The United Malaysian Rubber Co., Ltd., Singapore	Seattle	New York	129,600
FEBRUARY 25, S. S. <i>London</i> , The United Malaysian Rubber Co., Ltd., Singapore	Seattle	New York	105,840
FEBRUARY 25, S. S. <i>London</i> , The United Malaysian Rubber Co., Ltd., Singapore	Seattle	New York	44,800
MARCH 5, S. S. <i>Cyclone</i> , The United Malaysian Rubber Co., Ltd., Singapore	Seattle	New York	112,000

Shipment from	Arrived at	Shipped to	Pounds.
MARCH 7, S. S. <i>Grotius</i> , L. Littlejohn & Co., Inc., Singapore	San Francisco	New York	160,000
MARCH 17, S. S. <i>Walla</i> , L. Littlejohn & Co., Inc., Singapore	San Francisco	New York	33,600
GUTTA SIAM.			
FEBRUARY 24, S. S. <i>Orizaba</i> , L. Littlejohn & Co., Inc., Singapore	Seattle	New York	22,649
MARCH 7, S. S. <i>Grotius</i> , L. Littlejohn & Co., Inc., Singapore	San Francisco	New York	33,600
MANICOBAS.			
MARCH 12, S. S. <i>London</i> , Adolph Hirsch & Co., Bahia	New York	New York	1,584
MARCH 12, S. S. <i>London</i> , Adolph Hirsch & Co., Bahia	New York	New York	841
GUAYULE.			
FEBRUARY 24, S. S. <i>Orizaba</i> , Continental Mexican Rubber Co., Mexico	Akron, O.		1,584
MARCH 12, S. S. <i>London</i> , Continental Mexican Rubber Co., Mexico	New York		1,584
MARCH 12, S. S. <i>London</i> , Continental Mexican Rubber Co., Mexico	Akron, O.		1,584

CRUDE RUBBER ARRIVALS AT PACIFIC COAST AS STATED BY SHIPS' MANIFESTS.

PLANTATIONS.

[Figured 160 pounds net to the case or bale.]

Shipment from	Arrived at	Shipped to	Pounds.
FEBRUARY 2, 1919, S. S. <i>Venezuela</i> , Aldens' Successors, Limited, Hong Kong	San Francisco		60,840
Robinson & Co., Ltd., Hong Kong	San Francisco		2,740
Total			63,580
FEBRUARY 21, 1919, S. S. <i>Kyo</i> , Poel & Kelly, Ltd., Hong Kong	San Francisco		130,960
F. R. Henderson & Co., Ltd., Hong Kong	San Francisco		145,840
Aldens' Successors, Limited, Hong Kong	San Francisco		52,740
Total			330,560
FEBRUARY 21, S. S. <i>Neosho</i> , Rubber Importers & Dealers Co., Inc., Yokohama	Seattle	Seattle	45,360
L. Littlejohn & Co., Inc., Yokohama	Seattle	Seattle	61,000
Raw Products Co., Yokohama	Seattle	Seattle	2,640
Total			109,000
FEBRUARY 21, S. S. <i>Neosho</i> , William H. Stiles & Co., Singapore	Seattle	New York	19,260
Robinson & Co., Singapore	Seattle	New York	99,540
Curry, McPhillips & Co., Singapore	Seattle	New York	33,480
Poel & Kelly, Singapore	Seattle	New York	430,000
Rubber Trading Co., Singapore	Seattle	New York	39,780
Edward Maurer Co., Inc., Singapore	Seattle	New York	151,200
Swanwick Tire & Rubber Co., Singapore	Seattle	Akron, Ohio	122,760
Firestone Tire & Rubber Co., Singapore	Seattle	Akron, Ohio	419,380
The Goodrich Tire & Rubber Co., Singapore	Seattle	Akron, Ohio	314,460
R. A. Products Co., Singapore	Seattle	Seattle	91,620
Physical Products Co., Singapore	Seattle	Seattle	52,200
F. R. Henderson & Co., Singapore	Seattle	Seattle	86,760
J. T. Johnstone & Co., Singapore	Seattle	Seattle	41,220
Aldens' Successors, Limited, Singapore	Seattle	Seattle	32,940
Hong Kong Rubber Co., Ltd., Hong Kong	Seattle	Seattle	246,600
M. H. & Co., Ltd., Hong Kong	Seattle	Seattle	160,440
Eastern Rubber Co., Ltd., Hong Kong	Seattle	Seattle	85,140
L. Littlejohn & Co., Inc., Hong Kong	Seattle	Seattle	37,440
Aldens' Successors, Limited, Hong Kong	Seattle	Seattle	540
F. R. Henderson & Co., Hong Kong	Seattle	Seattle	3,420
Dunlop Tire & Rubber Goods Co., Limited, Hong Kong	Seattle	Seattle	11,700
The Goodrich Tire & Rubber Co., Hong Kong	Seattle	Seattle	1,000
Raw Products Co., Hong Kong	Seattle	Seattle	1,000
Poel & Kelly, Hong Kong	Seattle	Seattle	1,000
Rubber Trading Co., Hong Kong	Seattle	Seattle	1,000
Various, Hong Kong	Seattle	Seattle	1,000
Total			1,000
FEBRUARY 27, 1919, S. S. <i>Fuji</i> , G. Kawahara & Co., Yokohama	Seattle		129,000

Foot Note.—The figures under this head and under crude rubber arrivals at Pacific Coast as reported, have been obtained from different sources; renetment may, therefore, occur.

Manufacturer	Address	Port of Origin	Exports
MARCH 1, 1919, S. S. <i>Siberia Maru</i> .			
The Goodyear Tire & Rubber Co.	Hong Kong	San Francisco	23,400
Edvard Maurer Co., Inc.	Hong Kong	San Francisco	85,500
Aidens' Successors, Limited	Hong Kong	San Francisco	28,780
United States Rubber Co.	Hong Kong	San Francisco	45,360
			1,074,660
			1,888,000

MARCH 5, 1919, S. S. <i>Cyclops</i> .			
Aidens' Successors, Limited	Singapore	Seattle	152,100
The Goodyear Tire & Rubber Co.	Singapore	Seattle	380,700
L. R. Henderson & Co.	Singapore	Seattle	380,160
Frederick & Co.	Singapore	Seattle	61,200
J. T. Johnstone & Co.	Singapore	Seattle	73,440
L. Littlejohn & Co., Inc.	Singapore	Seattle	947,740
Patterson, Simons & Co.	Singapore	Seattle	5,220
Robinson & Co.	Singapore	Seattle	1,800
Frederick & Co.	Singapore	Seattle	47,520
Aidens' Successors, Limited	Singapore	Seattle	10,800
W. R. Grace & Co.	Singapore	Seattle	15,480
Peel & Kelly	Singapore	Seattle	436,640
Edvard Maurer Co., Inc.	Singapore	Seattle	23,760
F. R. Henderson & Co.	Singapore	Seattle	3,340
Firestone Tire & Rubber Co.	Singapore	Seattle	986,220
The B. F. Goodrich Co.	Singapore	Seattle	1,778,580
Dunlop Tire & Rubber Goods Co., Limited	Singapore	Seattle	27,180
The Goodyear Tire & Rubber Co.	Singapore	Seattle	60,120
Various	Singapore	Seattle	114,120
Total			5,114,020

MARCH 5, 1919, S. S. <i>Suez Maru</i> .			
L. Littlejohn & Co., Inc.	Columbo	Seattle	151,300
Various	Columbo	Seattle	212,220
Total			363,420

MARCH 5, 1919, S. S. <i>Kanagawa Maru</i> .			
Raw Products Co.	Cebu	Seattle	1,400
MARCH 7, 1919, S. S. <i>Agrotis</i> .			
Robinson & Co.	Singapore	San Francisco	89,640
The Goodyear Tire & Rubber Co.	Batavia	San Francisco	468,180
Total			557,820

FEBRUARY 24, 1919, S. S. <i>Pontianak</i> .			
L. Littlejohn & Co., Inc.	Singapore	Seattle	282,420
Various	Singapore	Seattle	136,260
Total			418,680

MARCH 5, 1919, S. S. <i>Cyclops</i> .			
Malaysian Rubber Co.	Singapore	Seattle	216,000
L. Littlejohn & Co., Inc.	Singapore	Seattle	104,040
Total			320,040

FEBRUARY 24, 1919, S. S. <i>Pontianak</i> .			
Patterson, Simons & Co.	Singapore	Seattle	15,300
MARCH 5, 1919, S. S. <i>Cyclops</i> .			
Malaysian Rubber Co.	Singapore	Seattle	74,160
MARCH 7, 1919, S. S. <i>Agrotis</i> .			
L. Littlejohn & Co., Inc.	Singapore	San Francisco	51,800

UNITED KINGDOM RUBBER STATISTICS.

IMPORTS.

Month Ended January 31.

	1918.		1919.	
	Pounds.	Value.	Pounds.	Value.
UNMANUFACTURED—				
Crude rubber:				
From—				
Dutch East Indies	751,000	£92,112	190,200	£22,511
French West Africa	18,400	1,251	.....	.....
Gold Coast	8,000	601	14,400	1,661
Other African countries	211,400	21,013	537,500	56,982
Peru	600	61	1,700	245
Brazil	2,460,600	298,547	1,820,600	213,843
British India	850,600	110,407	1,932,300	219,962
Straits Settlements and dependencies, including Lianouan	3,150,200	380,171	3,493,000	381,295
Federated Malay States	2,972,800	367,951	3,032,100	357,666
Ceylon and dependencies	6,839,500	808,833	2,603,500	304,272
Other countries	421,500	50,785	282,700	31,062
Totals	17,684,600	£2,131,732	13,908,000	£1,589,439
Waste and reclaimed rubber.	78,800	700	403	34
Totals	17,763,400	£2,132,432	13,908,403	£1,589,473
Gutta percha	1,017,000	183,631	2,496,900	489,753
UNMANUFACTURED—				
Boots and shoes—dozen pairs	2,177	£12,808	311	£1,456
Waterproof clothing	63	.....	.....	.....
Automobile tires and tubes	.....	.....	.....	14,262

	1918.		1919.	
	Pounds.	Value.	Pounds.	Value.
Motorcycle tires and tubes	1,088	.....	1,187
Bicycle tires and tubes	4,242	.....	475
Insulated wire	2,818	.....	.....
Totals	£7,148	.....	£17,380

EXPORTS.

UNMANUFACTURED—				
Waste and reclaimed rubber.	778,300	£20,926	316,100	£7,441
MANUFACTURED—				
Waterproofed clothing	.....	£30,780	.....	£70,141
Boots and shoes—dozen pairs	10,238	11,933	17,513	280
Insulated wire	.....	6,610	.....	19,322
Submarine cables	.....	17,069	.....	21,531
Carriage tires and tubes	.....	11,319	.....	223,271
Automobile tires and tubes	.....	63,160	.....	9,811
Motorcycle tires and tubes	.....	8,221	.....	9,110
Bicycle tires and tubes	.....	18,676	.....	31,202
Other rubber manufactures	.....	138,659	.....	240,955
Totals	.....	£325,837	.....	£663,365

EXPORTS—COLONIAL AND FOREIGN.

UNMANUFACTURED—				
Crude rubber:				
To France	1,739,500	£236,166	2,324,100	£266,052
Italy	947,800	117,470	1,853,900	208,874
United States	271,300	30,234	21,300	2,724
Other countries	190,500	27,620	229,000	30,533
Totals	3,149,100	£311,490	4,428,300	£508,183
Waste and reclaimed rubber.	22,300	676	3,300	125
Totals	3,171,400	£312,166	4,431,600	£508,308
Gutta percha	3,600	882	1,000	225
MANUFACTURED—				
Boots and shoes—dozen pairs	3	£97	1,297	£2,268
Waterproofed clothing	.....	11	.....	.....
Insulated wire	.....	25	.....	280
Automobile tires and tubes	.....	9,666	.....	16,448
Motorcycle tires and tubes	.....	.....	.....	627
Bicycle tires and tubes	.....	98	.....	.....
Totals	.....	£9,897	.....	£19,623

LONDON AND LIVERPOOL RUBBER STATISTICS.

IMPORTS.

January.

	1918.		1919.	
	Pounds.	Value.	Pounds.	Value.
UNMANUFACTURED—				
Crude rubber:				
At London	5,121,500	£615,739	9,052,000	£1,020,405
Liverpool	11,822,500	1,419,545	3,977,400	£462,868
Totals	16,944,000	£2,035,284	13,029,400	£1,492,273
Waste and reclaimed rubber:				
At London	9,700	100	.....	.....
Liverpool	97,800	778	.....	.....
Totals	77,500	£878	.....	.....

EXPORTS.

Waste and reclaimed rubber:				
From—				
London	108,900	£3,088	272,800	£5,680
Liverpool	107,400	1,587	43,300	1,761
Totals	306,300	£4,675	316,100	£7,441
REEXPORTS.				
Crude rubber:				
From London	2,351,500	£308,261	3,889,300	£445,676
Liverpool	652,600	£7,100	402,200	£45,095
Totals	3,004,100	£395,361	4,291,500	£490,771
Waste and reclaimed rubber:				
From Liverpool	22,300	£671	3,300	£125

RUBBER STATISTICS FOR ITALY.

IMPORTS OF CRUDE AND MANUFACTURED RUBBER.

Eleven Months Ended November 30.

	1917.		1918.	
	Quintals. ¹	Lire. ²	Quintals.	Lire.
UNMANUFACTURED—				
India rubber and gutta percha raw and reclaimed:				
From Great Britain	10,999	.....	7,155	.....
India and Ceylon	15,502	.....	7,011	.....
Straits Settlements	6,806	.....	28,652	.....
French India	2,107	.....	5,848	.....
Belgian Congo	1,221	.....	251	.....
Brazil	19,393	.....	17,419	.....
Other countries	1,474	.....	2,361	.....
Totals	57,502	63,252,200	69,293	76,222,300
Rubber scrap	9,604	1,087,600	2,379	285,400

¹ A quintal = 220.46 pounds.² A Lire = \$0.193.

Eleven Months Ended November 30.

	1917.		1918.	
	Quintals. ¹	Lire. ²	Quintals.	Lire.
MANUFACTURED—				
India rubber and gutta percha	371	816,200	599	1,317,800
Threads	.....	.....	.....	.....
Sheets	17	37,400	2	4,400
Cut sheets	1	2,000	.....	.....
Elastic fabric	5	25,000	.....	.....
Other kinds, including hard rubber	171	205,200	298	357,600
MANUFACTURED—				
Tubes:	.....	.....	.....	.....
From cut sheets	1	2,000	4	8,800
Elastic fabric	61	54,900	105	94,500
Other forms	.....	.....	.....	.....
Belting	452	497,200	512	563,500
Rubber coated fabrics—pieces	417	542,100	.....	.....
For carling, combs, etc.	163	244,500	.....	.....
Other forms	.....	.....	.....	.....
Boots and shoes—pairs:	.....	.....	.....	.....
From France	6,646	27,566	2,746	11,665
United States	23,459	356,604	3,472	378,120
Other countries	172	472	472	472
Elastic webbing	275	550,000	194	388,000
Clothing and article for travel	8	24,000	15	45,000
Manufactures n. e. s.	.....	.....	.....	.....
From cut sheets	54	140,400	58	72,800
Elastic fabric	1,092	1,310,400	1,527	1,857,400
Tires and tubes:	.....	.....	.....	.....
From France	5,848	24,068	2,408	.....
Great Britain	1,943	446	1	5,120,000
Other countries	13	10,672,200	.....	.....
Other rubber manufactures	.....	.....	.....	.....
From France	848	1,972	1,972	.....
Great Britain	1,740	3,331	3,331	.....
United States	2,210	5,774,400	223	6,513,600
Other countries	3	.....	.....	.....
Totals, manufactured	21,211,704	.....	17,034,120	.....
Totals, imports	85,351,584	.....	6,342,000	.....

EXPORTS OF CRUDE AND MANUFACTURED RUBBER.

Eleven Months Ended November 30.

	1917.		1918.	
	Quintals. ¹	Lire. ²	Quintals.	Lire.
UNMANUFACTURED—				
India rubber and gutta percha	.....	.....	.....	.....
raw and reclaimed	.....	.....	.....	.....
To Spain	1,548	1,394	.....	.....
United States	2,717	1,834	.....	.....
Totals	1,492,750	884,800	.....	.....
MANUFACTURED				
India rubber and gutta percha	218	479,600	79	167,200
Threads	.....	.....	.....	.....
Sheets	6	12,000	21	42,000
Elastic fabric	289	224,000	211	168,800
Insulated wire	2	1,000	3	1,500
Other forms including hard rubber	83	83,000	41	41,000
Tubes:	.....	.....	.....	.....
From cut sheets	6	13,200	19	41,800
Elastic fabric	289	224,000	211	168,800
Other forms	287	272,650	136	129,200
Beltling	12	12,000	87	87,000
Rubber coated fabrics—pieces	1,860	534,000	1,024	1,945,600
Elastic webbing	1,860	534,000	1,024	1,945,600
Clothing and articles for travel	34	22,400	8	95,000
Manufactures n. e. s.	.....	.....	.....	.....
From cut sheets	65	143,000	73	166,000
Elastic fabric	137	150,700	127	139,700
Tires and tubes:	.....	.....	.....	.....
To France	2,930	2,930	.....	.....
Great Britain	7,051	2,001	.....	.....
Spain	127	82	.....	.....
Switzerland	11	40	.....	.....
India and Ceylon	1,679	379	.....	.....
Dutch East Indies	350	605	.....	.....
Straits Settlements	1,435	35	.....	.....
Australia	131	70	.....	.....
Argentina	1,161	50	.....	.....
Brazil	1,120	60	.....	.....
Other countries	498	60	.....	.....
Totals, manufactured	17,353	22,558,900	7,074	10,322,000
Other rubber manufactures:	.....	.....	.....	.....
To France	194	265	.....	.....
Great Britain	197	110	.....	.....
Spain	34	12	.....	.....
Switzerland	208	31	.....	.....
Egypt	138	140	.....	.....
Argentina	392	140	.....	.....
Brazil	154	68	.....	.....
Uruguay	150	150	.....	.....
Other countries	.....	.....	.....	.....
Totals	1,885	30,709,500	987	15,214,200
Total exports	59,061,800	.....	29,511,000	.....

¹ A quintal = 220 lb. nominal.² A lire = \$0.193.

OFFICIAL INDIA RUBBER STATISTICS FOR THE UNITED STATES.

IMPORTS OF CRUDE AND MANUFACTURED RUBBER.

	December		1918.	
	Pounds.	Value.	Pounds.	Value.
UNMANUFACTURED—				
India rubber:	.....	.....	.....	.....
From:	.....	.....	.....	.....
France	46,259	\$21,049	.....	.....
Portugal	18,843	11,665	.....	.....
United Kingdom	784,720	452,041	30	\$30
Central America	51,278	16,693	12,424	3,541
Mexico	4,249	28,136	110,000	35,300
Brazil	3,675,945	1,339,659	5,582,432	1,776,418
Peru	41,798	11,111	152,000	49,390
Other South America	782,613	315,339	308,579	222,484
British East Indies	15,610,046	8,776,976	7,510,889	2,749,152
Dutch East Indies	2,243,654	1,352,607	582,533	191,609
Other countries	15,792	6,601	54,071	20,142
Totals	23,311,747	\$12,331,867	14,526,941	\$5,052,619
Manufatures:	.....	.....	.....	.....
Balata	127,524	64,622	59,216	41,693
Latex	404,539	174,152	190,350	76,140
Jelutong (Pontianak)	781,546	31,442	.....	.....
Gutta percha	14,161	1,988	.....	.....
Totals	1,327,770	\$372,208	249,566	\$117,233
Rubber scrap	758,098	53,941	1,128,397	93,315
Totals, unmanufactured	25,397,615	\$12,658,016	15,904,904	\$5,263,167
Manufatures:	.....	.....	.....	.....
Chicle	723,827	400,269	714,540	387,424
India rubber and gutta percha	.....	.....	.....	.....
India rubber substitutes	.....	.....	.....	.....
Totals	.....	.....	.....	.....

EXPORTS OF DOMESTIC MERCHANDISE.

	1917.		1918.	
	Pounds.	Value.	Pounds.	Value.
MANUFACTURED—				
Scrap and tires	.....	.....	.....	.....
All other tires	.....	.....	.....	.....
Automobile tires	.....	.....	.....	.....
Scrap and old	333,144	30,856	460,134	66,400
Reclaimed rubber	558,716	99,591	351,990	58,995
Beltling, hose and packing	.....	.....	.....	.....
Rubber boots	.....	.....	.....	.....
Rubber shoes	138,963	104,662	66,502	53,024
Druggists' rubber sundries	.....	.....	.....	.....
Insulated wire and cables	.....	.....	.....	.....
Other rubber manufactures	.....	.....	.....	.....
Totals, manufactured	.....	.....	.....	.....
Fountain pens	57,923	\$74,711	8,883	\$13,192
Totals	.....	.....	.....	.....

EXPORTS OF FOREIGN MERCHANDISE.

	1917.		1918.	
	Pounds.	Value.	Pounds.	Value.
UNMANUFACTURED				
India rubber	1,058,553	\$557,638	52,498	\$20,610
Balata	53,412	30,772	60,480	36,180
Latex	2,770	1,111	.....	.....
Jelutong (Pontianak)	575	89	.....	.....
Gutta percha	23,400	67,200	180	72
Totals, unmanufactured	1,153,875	\$597,899	113,158	\$56,862
MANUFACTURED—				
India rubber	.....	.....	.....	.....
Rubber substitutes, elasticon	.....	.....	.....	.....
etc.	.....	.....	.....	.....
Totals, manufactured	.....	.....	.....	.....
Exports of rubber goods to non-contiguous territories of the United States.	.....	.....	.....	.....
MANUFACTURED—				
To Alaska:	.....	.....	.....	.....
Beltling, hose and packing	.....	.....	.....	.....
Boots and shoes	3,695	5,854	2,118	5,058
Other rubber goods	.....	.....	.....	.....
Totals	.....	.....	.....	.....
To Hawaii:	.....	.....	.....	.....
Beltling, hose and packing	.....	.....	.....	.....
Automobile tires	70,080	67,575	.....	.....
Other tires	4,107	2,467	.....	.....
Other rubber goods	23,134	6,653	.....	.....
Totals	.....	.....	.....	.....
To Philippine Islands:	.....	.....	.....	.....
Beltling, hose and packing	.....	.....	.....	.....
Boots and shoes	.....	.....	.....	.....
Tires	17,941	37,394	.....	.....
Other rubber goods	17,965	14,535	.....	.....
Totals	.....	.....	.....	.....
To Porto Rico:	.....	.....	.....	.....
Beltling, hose and packing	.....	.....	.....	.....
Automobile tires	11,917	17,984	.....	.....
Other tires	1,117	9	.....	.....
Other rubber goods	9,407	9,109	.....	.....
Totals	.....	.....	.....	.....

¹ Details of exports of domestic merchandise by countries during December, 1918, were given in THE INDIA RUBBER WORLD, March 1, 1919, page 358.

THE MARKET FOR COTTON AND OTHER FABRICS.

NEW YORK.

AMERICAN cotton has been in steady demand, both here and abroad. Middling uplands spot cotton advanced from 26.10 cents on March 1, to 28.70 cents March 17, when the market declined, and 27.40 cents was quoted on March 26. The unsettled European situation and heavy liquidations were the causes of the decline.

The Government reports 12,022,601 equivalent 500-pound bales of ginned cotton for 1918, compared with 11,302,375 bales for 1917, and 11,449,930 bales for 1916. Included in the 1918 figures were 35,511 bales of American Egyptian cotton and 51,389 bales of Sea Island, compared with 92,501 bales last year.

EGYPTIAN COTTON.—The market has not yet returned to a normal condition; few sales were reported, and quotations are therefore largely nominal. A large consignment of Egyptian was due to arrive late last month.

SEA ISLAND COTTON.—The Southern markets have been fairly active, but holders were not disposed to accept present prices for large quantities.

SHEETINGS, DUCKS, DRILLS AND OSNABURGS.—While the market has not yet recovered from the effects of government regulation, the general situation is constantly improving; all quotations, however, are nominal.

RAINCOAT FABRICS.—There was a decided improvement last month in the cotton piece goods trade, and prices show a slight advance over last month's quotations.

TIRE FABRICS.—Some activity was reported in this market, being particularly noticeable later in the month. From the inquiries received and the orders placed, it would appear that manufacturers are now planning for increased tire production.

NEW YORK QUOTATIONS.

MARCH 26, 1919.

Prices subject to change without notice.

AIRPLANE AND BALLOON FABRICS:

Wingsutta, 5 A. I. L., No. 1, 40-inch	60	ea
No. 1, 38-inch	50	ea

ASBESTOS CLOTH:

Best, 6 mils., 100 sq. yd., brass or copper mesh	8.85	ea
100 sq. yd., brass or copper mesh	9.00	ea

BURLAPS:

25 7-ounce	6.5	ea
30 8-ounce	6.60	ea
40 11-ounce	7.25	ea
50 14-ounce	7.40	ea
60 16-ounce	10.75	ea
100 10 1/2-ounce	11.00	ea
150 7 1/2-ounce	None	
450 8-ounce	9.80	ea
450 9 1/2-ounce	None	
480 10-ounce	15.75	ea

DRILLS:

28-inch, 4 1/2-ounce	7.50	ea
40-inch, 4 1/2-ounce	7.50	ea
28-inch, 1 1/2-ounce	7.80	ea
28-inch, 1 1/2-ounce	7.80	ea
60-inch, 1 1/2-ounce	15.50	ea

DUCK:

CARRIAGE CLOTH		
28-inch, 10-ounce, 10-ounce duck	27.50	ea
28-inch, 1 1/2-ounce, 10-ounce	31.50	ea
28-inch, 16-ounce, 10-ounce	37.50	ea
28-inch, 17 1/2-ounce, 10-ounce	60.00	ea

MECHANICAL:

10-inch, 10-ounce	6.00	ea
10-inch, 10-ounce	6.40	ea
10-inch, 10-ounce	6.50	ea

HOLLANDS, 40-INCH:

10-inch, 10-ounce	7.50	ea
10-inch, 10-ounce	8.00	ea
10-inch, 10-ounce	8.00	ea

OSNABURGS:

10-inch, 10-ounce	7.50	ea
10-inch, 10-ounce	7.50	ea
10-inch, 10-ounce	7.50	ea

RAINCOAT FABRICS:

COTTON:

10-inch, 10-ounce, water-repellent	1.15	ea
10-inch, 10-ounce, water-repellent	1.25	ea
Cashmeres, cotton and wool, 56-inch, tan	.80	ea
cotton and wool, 36-inch plain	.33 1/2	ea
OK, 10-inch	.65	ea
blue and black	.75	ea
4 X 11	.30	ea
Twill, mercerized, 36-inch, tan and olive	.25 1/2	ea
blue and black	.27 1/2	ea
Twined	.35	ea
printed	.16	ea
Plaid, 60 X 84	1.15	ea
56 X 84	1.25	ea
Reps	.36 1/2	ea
Surface prints, 60 X 84	.14	ea
64 X 100	.15 1/2	ea

IMPORTED WOOLEN FABRICS SPECIALLY PREPARED FOR RUBBERIZING

—PLAIN AND FANCIES:

36-inch, 3 1/2 to 5 1/2 ounces	1.15	ea
36-inch, 2 1/2 to 5 ounces	.70	ea

IMPORTED PLAID LINING (UNION AND COTTON):

61-inch, 2 to 4 ounces	.85	ea
36-inch, 2 to 4 ounces	.50	ea

DOMESTIC WORSTED FABRICS:

26-inch, 4 1/2 to 8 ounces	.55	ea
----------------------------	-----	----

DOMESTIC WOVEN PLAID LININGS (COTTON):

36-inch, 1 1/2 to 5 ounces	.17	ea
----------------------------	-----	----

SHEETINGS:

JACKET:

Delaware	.23	ea
Schur Ball	.26	ea

TIRE FABRICS

JENCKES SPINNING COMPANY

PAWTUCKET RHODE ISLAND

SILKS

Cotton, 38 gauge		\$5.00
Schedule, 38 gauge		1.00
TIRE FABRICS:		
17-ounce Sea Island combed	quantity priced	1.40 @
17-ounce Egyptian, combed		1.25 @
17-ounce 2-strand, carded		1.40 @
17-ounce Pima, combed		1.68 @
17-ounce Pima, carded		.85 @

No. 1115

THE MARKET FOR CHEMICAL AND COMPOUNDING INGREDIENTS.

NEW YORK.

THE pig lead producers have made a radical cut in the price of the metal to the level at which a demand was created and lead is now selling on an advancing market. The strength shown in the lead market was reflected in that for spelter early in the month. During most of the last month the market in both lead and zinc has been dull and weak.

In general the market for compounding ingredients has not materially changed.

ANILINE. There has been a fairly active and steady demand, with prices declining from 24 to 23 cents per pound.

DRY COLORS. The demand has been very moderate. A marked tendency has been noted to make price reductions.

BARYTES. Toward the last of the month a better tone has prevailed, with some strengthening of price.

BENZOL. The demand has been light and prices have fallen off to 18 cents per gallon.

CARBON TETRACHLORIDE. Although the market has been dull and weak there has been no decline in price.

LITHOPONE. The cut in price early last month stimulated a demand which has held up fairly well. The bottom figure seems to have been 7 cents per pound in carload lots.

LITHARGE. The market has remained quiet, the price averaging 10 cents per pound.

SUBLIMED LEAD. The market has been inactive at $8\frac{1}{4}$ to $8\frac{1}{2}$ cents per pound.

WHITING. The market has been featureless, with moderate, steady demand.

ZINC OXIDE. The market has shown an improved and steady demand. Prices are about to be announced for the coming quarter. A new process zinc oxide is now being offered to the trade.

NEW YORK QUOTATIONS.

MARCH 26, 1919.

Prices subject to change without notice

ACCELERATORS, ORGANIC.

Accelerator N. C.	lb.	50	@
Accelerators	lb.	3.70	@
Acetone	lb.	65	@
Acetone	lb.	1.01	@ 1.25
Amide oil	lb.	24	@
Ammonia	lb.	8.65	@
Excelsite	lb.	1.15	@ 1.25
Hexamethylenediamine (powdered)	lb.	3.50	@
Paraphenylenediamine	lb.	1.50	@
Tensile	lb.	50	@
Thiocarbamide	lb.	50	@ 60
Yellow	lb.	* 60	@

ACCELERATORS, INORGANIC.

Lead, dry red (lbs.)	lb.	108.5	@	65.00
sublimed blue (bbls.)	bb.	08.5	@	65.00
Lead, white (bbls.)	bb.	08.5	@	65.00
white, basic carbonate (bbls.)	bb.	.09	@	65.00
Lead, oleate	lb.	.02	@	12.00
Lime, flour	lb.	.02	@	12.00
Litharge, domestic	lb.	.09	@	65.00
powdered	lb.	.12	@	12.00
sulphur	lb.	.10	@	65.00
Magnesium, carbonate	lb.	.03	@	65.00
Diatomite	lb.	.11	@	65.00
calcined heavy (Thistle)	lb.	.11	@	65.00
light	lb.	.12	@	65.00
Magnesium oxide, extra light	lb.	.65	@	65.00
medium	lb.	.65	@	65.00
Magnesia, calcined, powdered	ton	50.00	@	65.00

ALKALIES

Carriage and 76-mat coat ribbons	100	67	67
Silk and ribbons	100	100	100

COLORS.

Bism.			
Bone,	powdered	lb.	.05
	granulated	lb.	.09
Carbon,	black (sacks, factory)	lb.	.13
Drop,		lb.	.06
Ivory,	black	lb.	.16
Lead,		lb.	.16
Oil soluble,		lb.	.13
Oil,	soluble, oilfin	lb.	.35
Sodium,	black	lb.	.07
Pines,			
Coalbit,		lb.	.55
Prussian,		lb.	1.10
Ultramarine,		lb.	.18
Brown,			
	Iron oxide	lb.	.04
Ochre,	domestic	lb.	.02
	foreign	lb.	.03 to .04
Sienna,	Italian, raw and burnt	lb.	.08
Umber,	Turkey, raw and burnt	lb.	.06
Green,			
Chinese,	green	lb.	.16
Cerule,	and chromium (casks)	lb.	.75
Red,			
Antimony,	crimson, sulphur and of casks	lb.	.50
	crimson, "Mephisto" (casks)	lb.	*.55
Antimony,	golden sulphur of (casks)	lb.	.25
	golden, "Merino" (casks)	lb.	.25
	golden, sulphur (casks)	lb.	.28
	red sulphur (casks)	lb.	.25
	red iron sulphur	lb.	.25
Arsenic,	red sulphide	lb.	.30
Iron-	oxide, bright	lb.	.08
Iron oxide,	reduced grades	lb.	.12
	pure bright	lb.	.16
Oil soluble,	red	lb.	.25
	orange	lb.	1.25
Oximony,		lb.	.18
Vermilion,		lb.	.08
Vermilion,	English, pale, medium, dark	lb.	1.40

COMPOUNDING INGREDIENTS

Aluminum flake (bbls. factory. Less 5% carload).....	.ton	29.00	@
(sacks factory. Less 5% carloads).....	lb.	26.00	@
Ammonia oxide.....	lb.	18	@
Ammonia carbonate, powdered.....	lb.	14	@ .1445
Asbestos (carloads).....	lb.	14	@
Asbestos (bags).....	lb.	17	@
Barium, carbonate, precipitated.....	ton	35.00	@
Barytes, carbonate, precipitated.....	ton	60.00	@
Barytes, pure white.....	lb.	47	@
on codon.....	ton	33.00	@ 35.00
underground shot.....	ton	23.00	@ 25.00
Basofer.....	lb.	33.00	@
Blanc fixe.....	lb.	31.75	@
Boric ash.....	lb.	25	@
Chalk, precipitated, extra light.....	lb.	16	@
" " precipitated, heavy.....	lb.	05	@ .0515
China clay, domestic.....	lb.	15	@ .20
" " imported.....	lb.	18	@ .25
Cork dust.....	lb.	53	@
Cotton linters, clean mill run, f. o. b. factory.....	bale	None	
Fossil fuel.....	ton	50.00	@ 60.00
(bolted).....	ton	50.00	@ 60.00
Glue, high grade.....	lb.	11	@ .45
" " medium.....	lb.	17	@ .45
low grade.....	lb.	17	@ .35
Graphite, flake (400 pound barrel).....	lb.	17	@ .45
" " amorphous.....	lb.	04	@ .08
Ground glass (F. bulb).....	lb.	04	@
Influencing earth (ground).....	lb.	6375	@
Isopropyl alcohol.....	ton	60.00	@
Mica, powdered.....	ton	60.00	@
Plastic or Paris.....	ton	2.00	@ 3.00

Plumber shoes, powdered (old)	lb.	6.5	@
Rotten stone, powdered	lb.	1.5	@
Rubber, fine	lb.	1.5	@
Rub-R-Gum	lb.	2.20	@
Sales (silica)	lb.	2.20	@
Soapstone, powdered, domestic	lb.	18.00	@ 40.00
Starch, powdered corn (carload, bags)	cent.	4.74	@
Talc, American	cent.	4.52	@
French	cent.	2.50	@
Triphol, earth, powdered	lb.	.01 1/2	@
Typo-lith	lb.	8.00	@
Whiting, Alka (carload)	cent.	58	@ 90
commercial	cent.	1.25	@
Paris, white, American	cent.	1.50	@ 1.75
English chistone	cent.	1.75	@ 2.75
Wood pulp, imported	cent.	0.34	@
Wood flour, American	cent.	0.34	@

MINERAL RUBBER.

Glycerine	lb.	47.50	@ 57.50
Grease, carloads (factory)	cent.	55.00	@
M. R. class carloads (factory)	cent.	7.00	@
M. R. N.	cent.	100.00	@
Liquid rubber	lb.	1.15	@
Tricresyl, carload, factory	cent.	50.00	@
less carload, factory	cent.	55.00	@
Richmond	cent.	75.00	@
No. 64	cent.	40.00	@
318, 320 M. P. hydrocarbon	cent.	50.00	@ 55.00
Refined Phosphate	cent.	175.00	@
Kayen M. R.	cent.	1.30	@ 60.00
Rubron (carloads, factory)	cent.	50.00	@
class car, factory	cent.	40.00	@
Welsh rubber flux (factory)	cent.	175.00	@

OILS.

Castor, No. 1, U. S. P.	lb.	.27	@
No. 2, U. S. P.	lb.	.24	@
Corn, crude (U. S. P.)	lb.	.16	@
refined Argo	lb.	.21	@
Cotton	lb.	.21	@
Glycerine (98 per cent)	lb.	.12	@
Glycerol	lb.	.12	@
Linseed, raw (ca. loads)	lb.	1.52	@
linseed compound	lb.	1.00	@
Palm (Negeri)	lb.	1.50	@
Peanut	lb.	1.50	@
Petrolatum	lb.	.20	@
Petroleum grease	lb.	.20	@
Pine, steam distilled	lb.	.20	@
Pine tar	lb.	.20	@
Rosin, refined	lb.	1.50	@
Sassa	lb.	.20	@
Rosin	lb.	.20	@
Sassa	lb.	.20	@
Tar, commercial (cases)	gal.	.35	@ .36

SOLVENTS.

Acetone (98 per cent, domestic)	lb.	.18	@
methyl alcohol	lb.	.18	@
Benzol, C. C. (domestic)	lb.	.40	@
so. ant. ant.	lb.	.40	@
Beta naphthol, acidimetric	lb.	1.40	@
carboxylic grade	lb.	1.50	@
Carbon tetrachloride (domestic)	lb.	.07	@
tetrachloride (chimes)	lb.	1.50	@
Naphthalene, gasless (extra bbls.)	lb.	.24	@
75 to 76 degrees (extra bbls.)	lb.	.24	@
68 to 70 degrees (extra bbls.)	lb.	.24	@
Sassa	lb.	.20	@
V. M. & P. (extra bbls.)	lb.	.24	@
Isobutyl pine	lb.	.25	@ 35
Isobutyl, spears	lb.	.25	@ 21
Isobutyl, spears	lb.	.25	@ 21
Isobutyl, spears	lb.	.25	@ 21
Naphthalene, refined	lb.	.25	@
Naphthalene, refined	lb.	.25	@

SUBSTITUTES.

Black	lb.	.17	@ 24
White	lb.	.13	@ 24
Brown	lb.	.10	@ 16
Brown factory	lb.	.10	@ 16
White factory	lb.	.12	@ 23
Paraloid soft and medium (carloads)	lb.	17.00	@
hard	lb.	17.00	@

VULCANIZING INGREDIENTS.

Lead, black (extra bbls.) (Black H. H. H.)	lb.	.25	@
Grease mineral (domestic)	lb.	.25	@
Sulphur black (drums)	lb.	.06	@ 07
Sulphur, Hour, Brooklyn brand (carloads)	cent.	2.95	@
same with carloads	cent.	2.50	@
superfine (carloads, factory)	cent.	2.50	@

(See Also Colors-Antimony)

RESINS AND PITCHES.

Castella gum	lb.	.15	@
Pine tar, retort	lb.	11.00	@
kin	lb.	11.00	@
Pitch, Burgundy	lb.	.07	@
coal tar	lb.	.07	@
pine tar	lb.	.07	@
ponto	lb.	.14	@
Resin, Pontianak, refined	lb.	.07	@
granulated	lb.	.07	@
fused	lb.	.07	@
Rosin, K.	lb.	.07	@
powdered	lb.	.17	@

Shellac, fine orange	lb.	56.00	@
refined	lb.	1.50	@
refined	lb.	13.50	@

WAXES.

Wax, tallow, white	lb.	6.6	@ 7.5
creaming, white	lb.	1.50	@
stearic	lb.	1.50	@
cokerite, black	lb.	1.50	@
substitute	lb.	1.50	@
paraffin, white	lb.	1.50	@
paraffin, white (1 lb. in 1 lb. (see))	lb.	1.50	@
paraffin, white (1 lb. in 1 lb. (see))	lb.	1.50	@

NEW YORK.

THE MARKET FOR RUBBER SCRAP.

NEW YORK.

DURING the past month there has been no activity in the market for scrap rubber. The stagnant condition for both scrap and reclaimed rubber is attributed to the low level of crude rubber and also to the lack of demand for mechanical goods by such large consumers as the railroads. The latter factor is regarded as soon to be eliminated in considerable degree when consuming demand revives under the process of readjustment.

The reclaimers at present are operating their plants at less than half capacity and naturally are unresponsive to all scrap offers, particularly in view of the fact that the spring collections are expected to be larger than usual and still further depress prices.

Scrap dealers are facing a perplexing situation with no immediate relief in the way of improved conditions. Their available propositions are described as of the "starvation" variety.

BOOTS AND SHOES. Very little has been done. March average prices have averaged 7 1/2 cents.

INNER TUBES. Practically no demand. Prices nominal.

MECHANICALS. No improvement can be noted and prices tend downward.

TIRES. The demand is insignificant even at reduced prices.

NEW YORK QUOTATIONS FOR CARLOAD LOTS DELIVERED.

MARCH 26, 1919.

Prices subject to change without notice.

BOOTS AND SHOES:

Arctic tops	lb.	61 1/2	@
Boots and shoes	lb.	7 1/2	@ 07 1/2
Trimmed arctic	lb.	60	@ 06 1/2
Untrimmed arctic	lb.	55	@ 05 1/2

HARD RUBBER:

Battery jars, black compound	lb.	60	@
No. 1, bright	lb.	2	@ 2.5

INNER TUBES:

No. 1, old packing	lb.	2	@ 2.5
New packing	lb.	2	@ 2.5
No. 2	lb.	2	@ 2.5
Red	lb.	2	@ 2.5

MECHANICALS:

Black scrap, mixed, No. 1	lb.	64	@ 04 1/2
Black scrap, mixed, No. 2	lb.	64	@ 04 1/2
Heels	lb.	64	@ 04 1/2
Horse-shoe pads	lb.	64	@ 04 1/2
Hose, air-brake	lb.	64	@ 04 1/2
fire, cotton lined	lb.	64	@ 04 1/2
garden	lb.	64	@ 04 1/2
Insulated wire stripping, free from fiber	lb.	64	@ 04 1/2
Mattings	lb.	64	@ 04 1/2
Paraffin, No. 1	lb.	64	@ 04 1/2
Red scrap, No. 1	lb.	64	@ 04 1/2
White scrap, No. 1	lb.	64	@ 04 1/2
White scrap, No. 2	lb.	64	@ 04 1/2

TIRES, PNEUMATIC:

PNEUMATIC:

Auto peelings, No. 1	lb.	64	@ 04 1/2
No. 2	lb.	64	@ 04 1/2
Black	lb.	64	@ 04 1/2
Standard white auto	lb.	64	@ 04 1/2
Standard mixed auto	lb.	64	@ 04 1/2
Striped, ungummed	lb.	64	@ 04 1/2
White, G & G, M. & W., and U. S.	lb.	64	@ 04 1/2

SOLID:

Carriage	lb.	64	@ 04 1/2
Iron	lb.	64	@ 04 1/2
Trunk	lb.	64	@ 04 1/2

*Nominally.



Vol. 60.

APRIL 1, 1919.

No. 1.

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 RUBBER PRODUCTION IN THE NETHERLANDS EAST INDIES.	
The Department of Agriculture of the Netherlands India Government estimates that 193 rubber estates in Sumatra produced 51,553,550 pounds of rubber during 1918.	

NEW YORK

CHICAGO

cal work in general for rubber manu-
not only rubber, but everything else
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Edited by HENRY C. PEARSON

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MAY 1, 1919

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Balloons—Toys—Novelties—Bathing Caps—Etc.

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SAMUEL CABOT, INC., BOSTON, MASS.

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NEW YORK



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The Victory Loan.

NOT a forced finish, nor even a grandstand finish, but a strong, clean finish, is both duty and privilege. On the part of the rubber industry we confidently predict it.

THE NEW HIGH-PRICE LEVEL.

THE HALT in production, the slowing of industry, the unemployment of labor, complaints of which are to be heard from many quarters, in the belief of experts are due to but one thing, the general opinion that prices must drop. No less an authority than Irving Fisher, professor of political economy of Yale University, points out that we are threatened with a widespread business depression, notwithstanding the unsound conditions usually preceding such depression are absent.

People cannot forget the prices existing "before the war," holding to the opinion that these are "normal." This attitude is putting the brakes upon business everywhere. But those who are waiting for prices to come down are not putting their own prices down. Neither is anybody else. Professor Fisher declares:

"Business men should face the facts. To talk reverently of 1913-14 prices is to speak in a dead language

to-day. The buyers of the country, since the armistice, have made an unexampled attack upon prices through their waiting attitude, and yet price recessions have been insignificant. The reason is that we are on a new high-price level, which will be found a stubborn reality. Business men are going to find out that the clever man is not the man who waits, but the one who finds out the new price facts and acts accordingly."

TRADE AND INTERNATIONALIZATION.

THE PLAN which is being worked out at the peace conference for the disposition and future government of the German colonies possesses great possibilities for the business world in general and the United States in particular. Under the system of mandatory government sponsored by President Wilson and now looked upon with favor by most of the governments of the entente, it is apparent that there will be an equal opportunity for trade for all nations, whereas, had the colonies been apportioned among the several powers, it is quite probable that there would have been a tendency for the government most interested to hold the trade of its own particular colony for itself exclusive of the claims of others.

Under the mandatory plan each territory, while nominally responsible to a certain one of the powers to be designated when the most equitable method is agreed upon, will be given a freedom which is almost equivalent to self-government. The former German colony once emancipated from the stifling influences of Kultur, is quite likely to establish trade channels of its own, and will be under no obligation to confine its commerce to its sponsor government. As long as Germany had its clutches on Kiao-chau, a valuable territory in China practically the size of Illinois, the chances for any except a German business house to transact any business there were small indeed. And the opportunity for fair competition in trade would not have been much better, had the colony Kiao-chau been awarded to Japan. Enterprising American firms should have no difficulty in securing their share of the trade of the former German colonies, if the plans of the far-seeing American President are carried through.

Furthermore, suppose in the general apportionment of the colonies Germany were given an opportunity to exercise mandatory power over one or more of them, as a result of the display of a proper spirit of cooperation, and an abandonment of her old ruthless, monopolistic spirit toward those she considered her subjects. If she were then able to keep up her commercial gait under a free and open competition with other nations, it might instill in the minds of her business men principles of respect for others which they have never had before. And should Germany find herself outdistanced in the scramble for trade, it might justly be taken as an indication that the business acumen with which she was formerly credited was somewhat exaggerated.

GETTING CLOSER TO BRAZIL.

IF American business men do not grasp the opportunities that are now offered them for improving trade relations with the South American republics it will be their own fault. The Brazilian Association of Commerce has set the example for similar organizations in other Latin states by the adoption of an agreement which should minimize the disputes over merchandise which have long been a source of ill feeling between South American firms and the United States exporters. The plan is for permanent arbitration committees appointed jointly by the Brazilian and American commercial organizations. It includes a standard form of contract, and any disagreement arising between the parties is to be settled impartially, inexpensively and expeditiously without recourse to the courts. The misunderstandings which have heretofore arisen over goods which do not match samples and shipments under weight should be absolutely eliminated. It is evident that the good feeling engendered by Brazil's prompt support of the United States in its declaration of war against Germany is already beginning to bear fruit.

ABANDON TIRE MILEAGE GUARANTIES.

BRITISH rubber tire manufacturers have practically decided to abandon guaranteeing minimum mileage for solid rubber tires, which dates back to the infancy of the commercial vehicle. They present sound reasons for so doing and point out that the perpetuation of the mileage guaranties is marked by certain disadvantages. It is declared that the mileage guaranty induces the user to expect that amount of mileage and no more, and encourages carelessness on the part of the driver who regards the responsibility of the tire as solely that of the maker. The members of the British Rubber Tire Manufacturers' Association have therefore decided to abolish the standard mileage guaranty completely and will be content to allow their products to be judged by the service given in the future. They hereby pledge themselves to see that their tires give the biggest mileage, the best service and the fullest satisfaction to their customers. They further state that users can be assured of prompt and generous treatment whenever unsatisfactory results are shown.

HEAVY TAXES AND NEW ENTERPRISES.

GOVERNMENT officials are now especially active in urging capital to take prompt advantage of trade opportunities which the war has left open on every side. Secretary of Labor Wilson especially is at the forefront insisting that the wheels of industry turn and that the spirit of unrest be quelled by providing employment for the wage-earning population. Excellent advice, but the outlook is that if the business succeeds, taxes may claim 50 to 80 per cent of the profits. That taxes must be heavy is acknowledged, but should they be too heavy? The

incoming Congress will have a most important duty before it in determining whether it will not be better to provide more moderate levies spread over a longer period, which would probably yield better returns and not act as a brake on legitimate enterprise. Established business will continue despite the handicap of heavy taxes, but the fear of such taxes will inevitably be a bar to new developments.

THE ENGLISH VIEWPOINT.

BRITISH dealers in rubber goods look for the import restrictions on rubber goods to be continued for a further period, and the quantity to be imported fixed at 15 per cent of the imports during the year 1916, which is the year when imports attained their maximum. This restriction, it is believed, will apply particularly to tires and general rubber goods, but there may be slight modification as regards rubber boots and shoes.

The situation was brought about during the war by the government requiring the rubber manufacturers to turn over most of their machinery for war purposes as well as a large proportion of the stocks held at their works and at warehouses, and the calling in of stocks held by motor agents. This gave American manufacturers, who for years had been struggling for a foothold in England, an opportunity for the sale of their goods, which they could not have attained in any other circumstances, the English manufacturers believe.

Imports of rubber boots and shoes, tires, waterproofed apparel and belting rose to unprecedented figures, which caused great misgivings to our cousins across the water. The situation was modified when the United States entered the war, and an agreement was entered into cutting down imports to 15 per cent of the figures for 1916. It is reasonable to suppose, however, that a considerable demand has been created for American goods across the water and it may take some time for British manufacturers to recover.

THAT THE SALE OF NON-SKID TIRES IS NOW FAR BEYOND that of plain is due to the realization of the general public that the non-skid type possesses far superior wearing qualities, due to the additional rubber, and to the greater utility of the non-skids as savers of gasoline because of the better traction they afford. Four years ago one company reports it was selling as many plain treads as non-skids, but to-day the latter sell in the proportion of ten to one. The late C. J. Bailey in bringing out the "Bailey Tread," the first all-rubber anti-skid, was both pioneer and prophet in this development.

ALONG THE LINE OF THE EDITORIAL POSITION TAKEN by this paper in its November issue, the United States Chamber of Commerce favors an international convention of commercial organizations. Needless to say, we think the suggestion very timely.

Cotton and Guayule in Lower California.

THE controversy that has raged in the daily press for the last few weeks concerning developments in Lower California is an indication that matters may be coming to a head regarding this vast tract of practically undeveloped territory. It is a country of illimitable possibilities and it may eventuate into considerable importance to the rubber industry. Already large crops of cotton are being harvested annually, and it remains to be seen whether the country is also to be planted with guayule. It is declared that anything that can be raised in Arizona can be raised in the watered part of Lower California, and it is said that plans for trying out guayule on a large scale have already been discussed.

Briefly the question which has stirred California and which that state is trying to get the rest of the country excited over, is whether there is to be a large Japanese colony located on the immense holdings of the California-Mexico Land & Cattle Co., consisting of 800,000 acres, more or less, in the northern part of Lower California. The west line of the property runs almost due south of Calexico, thence east across the head of the gulf to the original bed of the Colorado River which forms the eastern boundary of the tract. The north line is the international boundary. The whole tract comprises the Mexican portion of the Imperial Valley, which valley is practically all under irrigation canals and susceptible to intensive cultivation.

It is admitted that there have been negotiations with a Japanese syndicate to take over the property, which is valued in the millions, some say as high as \$50,000,000, and that these negotiations have been submitted to the State Department to determine whether such a deal would be in violation of the

is above tilling the soil and the source of the anti-Japanese agitation in California can generally be traced to this element.

A few facts concerning the remarkable status of Lower California are interesting. While nominally a part of the Mexican government under Carranza, since the overthrow of Madero the country has been almost an independent principality. It is governed by Esteban Cantu, whose headquarters are at Mexicali, just over the American border. In fact, the other side of the main street of Mexicali is Calexico, the American town, the dividing line being the middle of the street. Calexico is dry, orderly and run according to the laws of California. If you want excitement, step across the street into Mexicali, and you can have all the excitement that saloons, gaming houses, dance halls and other modes of entertainment afford. Needless to say the sporting element makes the most of this situation. It is reported that Mexicali and other Mexican towns along the border are preparing to reap untold harvests from the situation in the United States, and that sites for breweries, distilleries, wineries, etc., are at a premium.

Governor Cantu's policy toward the paternal government in Mexico City is simple. He has an independent army, well paid at the end of each month in gold, armed to the teeth, well equipped, capable and willing of giving the hungry and ill-paid armies of Carranza the fight of their lives if they ever succeed in getting into his domains. President Carranza is said to be much peeved when he thinks of Governor Cantu reigning in affluence in Lower California with money rolling in from imports and taxes. About every so often Carranza feels he should have a share in it, and sends an emissary to confer with the



TYPICAL SCENE ON THE C. & M. RANCH IN LOWER CALIFORNIA.

Monroe Doctrine. The mention of anything connected with Japanese is sufficient to set all California aflame, and politicians who have capitalized this feeling to their political advantage for years are making the most of it. Meanwhile it is admitted that the Japanese, once located there, would undoubtedly make the property bloom like a rose, as they have done the desert lands all over California, wherever they have been permitted to obtain a foothold.

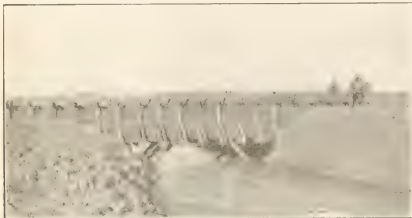
Your true native son of the Golden West, however, would prefer to see the arid lands remain arid and the agitator and soap-box orator orate instead of working, to allowing the industrious Japanese make use of the idle lands. The true I. W. W.

Governor on the subject. The emissary is always treated very politely, given plenty to drink, and in the morning finds himself aboard a train with a return ticket to Mexico City. Cantu is the President, Lord High Executioner, and Board of Education of Lower California, and it is commonly reported his stipend is \$50,000 a year, with a few perquisites on the side. Just now he is engaged in building a highway to Ensenada, the capital of the lower peninsula. It is impossible for Carranza to get an army over into Cantu's realms without going through the United States, which the United States, in the interest of peace and harmony, would not countenance. It is reported, however, that Carranza is now contemplating a railroad into Lower California.

there is probable that Governor Canner will have taken up his residence in some American city, or possibly Europe.

The C. & M. ranch is in reality the delta of the Colorado and is the only land in America that is overflowed and enriched annually like the delta of the Nile. The cultivated, irrigated land is protected by levees, but the uncultivated area is inundated annually and enriched by the silt. This has been going on for centuries, so that wells put down 1,100 feet have not penetrated the strata of productive soil.

The total area of the irrigable district on both sides of the international line is about 1,200,000 acres; on the American side are the Imperial and Coachella valleys, and on the Mexican side



IRRIGATION TITLES AND FLOODS ON THE C. & M. RANCH IN LOWER CALIFORNIA.

is the property known as the C. & M. ranch. In 20 years of operation the property has not paid any dividends, all the profits having been put back into improvements. It was originally acquired by the late Harrison Gray Otis of Los Angeles by straight purchase from the Mexican Government, and the title is said to be perfect. The land is now controlled by Harry Chandler of Los Angeles, the son-in-law of General Otis, and the other heirs of the Otis estate and their associates. Mr. Chandler, when the Japanese project was first broached, made the following statement to the State Department at Washington:

"While my company is anxious to secure these reliable tenants, amply financed, to develop our property in Mexico, we are, first of all, American citizens, and do not wish to make any move which could in any way prejudice a question which always appears to be subject for agitation between the two countries. We will not, under the circumstances, consider making any lease of this kind to Japanese, where colonization is probable, until we are first authoritatively informed that such an arrangement will be agreeable to the Government of our own country. We believe that most of the Japanese labor for this enterprise will come from the Pacific Coast States, and thus relieve to some extent the pressure of this class of people now in the United States, and will be an advantage, rather than a disadvantage."

A CHANCE FOR RUBBER TOYS.

At a recent meeting of the toy manufacturers of the United States it was announced that the association had been invited by the Smithsonian Institution, of Washington, D. C., to gather a complete collection of all American toys that were popular during the war, to be placed on permanent exhibition, and a special committee was appointed for that purpose. Rubber toys will, of course, form an important part of the exhibit. Taking advantage of war conditions, the toy industry in the United States has reached a gross retail volume of \$40,000,000 annually and includes about everything that the youthful heart desires. No longer will young Americans be dependent on toys "Made in Germany."

RUBBER TRADE INQUIRIES.

This inquiry that follows have already been answered; nevertheless they are of interest not only in showing the needs of the trade, but because of the possibility that additional information may be furnished by those who read them. The editor is therefore glad to have those interested communicate with him.

(705.) An inquiry has been received for names of manufacturers of tissue-paper transfers for marking inner tubes.

(706.) A correspondent desires to obtain African paste, formerly used as a substitute for chicle.

(707.) A manufacturer requests information as to the nature of india rubber pulp, where it can be obtained, and its cost.

(708.) Inquiry is made for a varnish that will give a high gloss to rubber goods.

(709.) A correspondent requests the address of the maker of rubber fishes used in surf bathing.

TRADE OPPORTUNITIES FROM CONSULAR REPORTS.

Addresses may be obtained from the Bureau of Foreign and Domestic Commerce or its district or cooperative officers. Request for each should be on a separate sheet, and state number.

(28,866.) A firm in France desires agency for and to purchase waterproofed cloth, rubber materials, etc. Correspondence in French.

(28,868.) A merchant in France desires agency for sale of rubber overshoes. Correspondence in French or Spanish.

(28,886.) A man in France desires agency for sale of rubber goods. Correspondence may be in English.

(28,970.) A firm in Norway desires agency for and to purchase rubber tires.

(28,928.) A man in Italy desires agency for sale of pneumatic tires, rubber articles, asbestos fittings, etc. Correspondence in Italian.

(28,931.) A man in Cuba desires exclusive agency for and to purchase hard-rubber tubes to cover wire of the leaves of green and white porcelain and metal flowers and foliage.

(28,948.) A company in Sweden desires to purchase rubber goods for technical and industrial purposes, gutta percha goods, machine and engine packings, asbestos manufactures, machine beltings, woven hose and fittings, diving apparatus, insulating materials, etc. Quotations should be given f. o. b. Payment 30 days after invoice, or against documents.

(28,985.) A merchant in France desires agency for sale of rubber goods.

(28,991.) A company in Norway desires agencies for sale of rubber, rubber goods, etc.

(28,993.) A man in Sweden desires to purchase cables.

(29,011.) A company in Italy desires agency for and to purchase rubber shoes, heels, and other rubber goods. Correspondence may be in English.

(29,015.) A man in Italy desires agency for sale of rubber heels and fountain pens.

(29,030.) A firm in Greece desires to purchase 40,000 pairs of rubber shoes for men, women, and children. Quotations should be given f. o. b. New York. Samples requested. Payment to be as required.

(29,045.) A man in Norway desires agency for and to purchase waterproofed fabrics and garments, belting, rubber, rubber goods, etc. Terms, cash against documents in Norway.

(29,059.) A firm in Sweden desires to purchase automobile tires, rubber sundries, etc. Quotations should be f. o. b. New York. Terms, cash against documents.

(29,062.) A company in Norway desires agency for and to purchase rubber goods. Payment against documents.

(29,068.) An American firm with established connections in Denmark desires to purchase pneumatic and solid tires and tubes, brake lining, etc.

Echoes of The Great War.

THE VICTORY LIBERTY LOAN AS AN INVESTMENT.

THE VICTORY LIBERTY LOAN campaign began Monday, April 21, and will continue until Saturday, May 10, 1919, inclusive. The terms of the loan, announced by the Treasury Department, are in brief as follows: the issue will be limited to \$4,500,000,000, except as it may be necessary to increase or decrease the amount to facilitate allotment on a graduated scale similar to that employed in connection with the First Liberty Loan. The loan will take the form of three to four-year 4½ per cent gold notes convertible at the will of the holder into 3½ per cent notes free from all except estate and inheritance taxes. The 4½ per cent notes are exempt from State and local taxes, except estate and inheritance taxes, and from Federal normal income taxes.

The limitation of the offering, the rate of interest, and the short maturity render these notes an attractive investment for all classes of buyers. Moreover, they seem likely to have a favorable effect upon the Government issues now outstanding. As this will be the last Liberty Loan, capital and labor throughout the country are patriotically disposed to finish the job with flying colors, and most trades are pledged to full support.

Large buyers are reminded by the Treasury Department that a person may hold up to \$200,000 worth of bonds of the First Liberty Loan converted and Second, Third and Fourth Liberty Loans, with interest received after January 1, 1919, exempt from surtaxes, excess profits and war profits taxes, on condition that he holds at least one-third as many Victory Loan notes. This exemption continues during the life of the Victory notes.

THE DRIVE IN GREATER NEW YORK.

The response in the Fourth Liberty Loan campaign on the part of the rubber industry was most gratifying in that over \$11,000,000 was subscribed as against the quota of \$10,000,000 assigned to it.

In the present drive the rubber industry of Greater New York has been assigned a quota of \$6,500,000, which amount it is safe to assume will not only be fully subscribed but oversubscribed, and to accomplish this every possible source will be solicited.

Committees representing the various branches of the industry, namely, tires, boots and shoes, crude rubber, mechanical rubber goods, medical rubber goods, hard rubber goods and reclaimed rubber, have been appointed, whose representatives will solicit subscriptions from the trade, and needless to say, the committee hopes for a most generous response.

The following is the personnel of the Special Liberty Loan Committee for the Rubber Industry of Greater New York:

CHAIRMAN.

W. J. Kelly, Poel & Kelly, New York City.

VICE-CHAIRMAN.

George B. Hodgman, Hodgman Rubber Co., Tuckahoe, N. Y.

SECRETARY.

J. Abercrombie, The Rubber Association of America, Inc., New York City.

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G. B. Hodgman, vice-chairman, Hodgman Rubber Company.
T. S. Lindsey, Kelly-Springfield Tire Co.

A. H. Brown, Meyer & Brown.

G. H. Mayo, United States Rubber Co.

S. H. Jones, United States Rubber Co., Goodyear's India Rubber Glove Division.

J. Stuart Brown, Gutta Percha & Rubber Mfg. Co.

Clarence H. Low, United States Rubber Reclaiming Co.

Samuel Dodd, Vulcanized Rubber Co.

H. C. Pearson, editor, "The India Rubber World."

H. M. Williams, general manager, "The Rubber Age and Tire News."

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W. B. Bedford, The Goodyear Tire & Rubber Co.

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Harold W. Stimpson, Ajax Rubber Co., Inc.

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Collier W. Baird, Rubber Trading Co.

F. H. Peaty, A. H. Aslett & Co.

W. H. Stiles, William H. Stiles & Co.

Bancroft Henderson, F. R. Henderson & Co.

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E. C. Beard, Beacon Falls Rubber Shoe Co.

D. A. Hawkins, United States Rubber Co.

F. H. Edmester, J. E. Bates & Co.

F. M. Sheppard, Jr., Goodyear Rubber Co.

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N. B. Quick, The Miller Rubber Co.

J. T. Humphrey, United States Rubber Co.

Edward T. McCreery, United States Rubber Co., Goodyear's India Rubber Glove Division.

Leo Plant, United States Rubber Co., Goodyear's India Rubber Glove Division.

MECHANICAL RUBBER GOODS:

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A. S. Hardy, Manhattan Rubber Manufacturing Co.

W. V. Aydelotte, The Goodyear Tire & Rubber Co.

L. E. Purtill, New York Belting & Packing Co.

William Wise, chairman, United States Rubber Co.

RECLAIMED RUBBER:

Clarence H. Low, chairman, United States Rubber Reclaiming Co.

Clark W. Harrison, Bloomingdale Rubber Co.

Lloyd Appleton, F. H. Appleton & Son, Inc.

Nat E. Berzen.

HARD RUBBER:

Samuel Dodd, chairman, Vulcanized Rubber Co.

H. Weida, India Rubber Co.

Bruce Bedford, Lucerne Rubber Co.

PUBLICITY:

H. C. Pearson, "The India Rubber World."

H. M. Williams, "The Rubber Age and Tire News."



W. J. KELLY, CHAIRMAN.
SECREARY: J. ABERCROMBIE, CENTRAL COMMITTEE.

THE SUCKER LIST.

A slangy expression and not at all pleasant, and it is applied to small owners of Liberty Bonds by sharpers who sell fake stock. When the Government started its Liberty Loan campaign, the get-rich-quick swindlers, who saw their game endangered, put themselves and all their employees at work selling Liberty Bonds and kept lists of the names of all to whom bonds were sold. The lists of such owners make what the sharks regard as the biggest and best "sucker list" the gentry ever had.

Any one who has a Liberty Bond or a book of War Savings Stamps is a "prospect" for fake stock. His name may be on the list of the oily-tongued sharper.

The American people are paying out some half a billion dollars a year to the support of worthless stock schemes. They reap therefrom \$500,000,000 worth of—thin air.

That is not a guess. It is the figure given by the Capital Issues Committee of the United States Treasury. And, the committee assures us that it is conservative.

Happily there is a Government agency to-day on the trail of the stock sharp. It is the Federal Trade Commission, empowered by Congress to prevent unfair methods of competition in interstate commerce. The Commission may well be expected to look upon the fleecing of Americans of their Liberty Bonds as decidedly "unfair."

Manufacturers are advised that their employees will doubtless have early calls from one of the pleasant representatives of the sharper outfit. When they do, just advise them to drop a postal to the Federal Trade Commission at Washington and tell them about that visit and send them the attractive literature that is handed them. Or, send it in to THE INDIA RUBBER WORLD and we will forward it to Uncle Sam's men.

BRITISH IMPORT RESTRICTIONS MODIFIED.

The War Trade Board announced April 3, 1919, that British import restrictions have been modified to permit the importation freely under general license of the following commodities previously importable only under special license: reclaimed rubber, rubber-covered rollers for clothes wringers, medical syringes of all kinds, acetic acid of all kinds, barytes, chewing gum, diatomite, pumice stone, and pumice powder.

RESUMPTION OF TRADE WITH GERMAN AUSTRIA.

Effective April 2, 1919, the War Trade Board announced the resumption of trade and communication with German Austria, subject to the rules and regulations of the War Trade Board. Applications will be considered for licenses to export or import all commodities, except that for military reasons, export licenses for certain specified commodities will be granted only in exceptional cases. The restricted list includes aircraft of all kinds, including airplanes, airships, balloons and the component parts, together with accessories and articles suitable for use in connection with aircraft; also clothing and equipment of a distinctly military character.

Merchandise is permitted to be exported only upon the understanding that it is intended to supply the internal domestic needs of German Austria; and that, without the consent of the Inter-Allied Trade Committee at Vienna, the reexportation of such merchandise is forbidden to countries with which commercial relations are not authorized, and further, that such reexportation constitutes a violation of the Trading with the Enemy Act.

For the exportation of commodities, applications should be filed on Form X-A. No supplemental information sheet will be required for commodities identified with the rubber industry.

For importations into the United States individual import licenses will be required, in accordance with the regulations applicable to importations from the neutral countries of Europe.

The War Trade Board has received no official advices concerning the regulations governing importations into German

Austria, and prospective exporters should therefore communicate with their customers abroad before making definite commitments, so that the importers may comply with any import regulations that may be in effect.

SPECIAL FOOTWEAR LASTS FOR CRIPPLED SOLDIERS.

The Canadian Consolidated Rubber Co., Limited, Montreal, Quebec, Canada, is ready to do its share in assisting such returning soldiers as are in need of special footwear. In its catalog sent out to dealers it has this notice:

Hundreds of our brave Canadian boys will be returning with foot deformities, that to a large extent may be overcome by wearing properly fitted footwear. For such cases we will make special lasts for rubbers free of charge. From these special lasts, properly fitting rubbers, arctics or excluders will be made at the same prices as our regular lines.

SERVICE NOTES AND PERSONALS.

Captain E. E. Williams, of the Canadian Army Service Corps, and formerly manager of the London, Ontario, branch of the Dunlop Tire & Rubber Goods Co., Limited, Toronto, Ontario, has returned to the Dunlop company as manager of the pneumatic and truck tire department, Toronto. Enlisting in August, 1914, he was in France with the 1st Canadian Divisional Train as supply and transport officer during the whole of 1915 and the early part of 1916. His engagements include Festubert, Givenchy, Loos, and two battles at Ypres, where the Germans first used gas. Returning to England in the spring of 1916 for an appointment with what was then the Canadian Training Division, he did staff work there, latterly as Inspector of Catering, until his return to Canada in March of this year.

E. E. Hellman, employed by the Electric Hose & Rubber Co., Wilmington, Delaware, prior to his enlistment as a private in K company, 339th Infantry, with which he has been serving in Northern Russia, has been decorated by the British Government for bravery in action. Under heavy fire, he coolly stood and held off the enemy by firing a Lewis gun from his shoulder.

Charles C. and David Goodrich, sons of the late Dr. B. F. Goodrich, founder of The B. F. Goodrich Rubber Co., Akron, Ohio, have been promoted by the War Department; Major Charles C. Goodrich is now a colonel and Major David Goodrich has become a lieutenant-colonel.

MARTYRS TO THE CAUSE OF LIBERTY.

LIEUTENANT GORDON ROBERT HALL, of the 308th Field Artillery, died of wounds, September 18, 1918, and was buried with military honors in France.



LIEUT. G. R. HALL.

Lieutenant Hall was born February 23, 1887, in Chicago, where his early education was obtained, and in 1909 he was graduated from Amherst. At first joining the reportorial staff of the "Chicago Daily News," he was later appointed publicity director of the W. D. Allen Co., Chicago, Illinois. In the summer of 1917 he entered the second officers' training camp at Fort Sheridan, and was commissioned a second lieutenant. Sailing for France in December, he attended the artillery school at Saumur for three months, and was sent behind the front line for two months, then ordered back to the school as an instructor. He was afterward attached to the 129th Field Artillery, later being reassigned to the 308th regiment and promoted to a first lieutenancy. In both regiments he was in action on the front lines. By his sincere character, his integrity, loyalty and devotion, Lieutenant Hall had endeared himself to a wide circle of friends who mourn his untimely death.

DISABLED SOLDIERS IN THE RUBBER INDUSTRY.

By Gilbert I. Stodola.

THE casualty lists of the great war, although perhaps not so large, compared with the total number of our men under arms, as some feared they would be, yet show a by no means inconsiderable number who, because of wounds or other disablement, will be unfitted to return to their former vocations. These men are already beginning to return from abroad and the number homeward bound will continue to increase.

The Vocational Rehabilitation Act passed expressly by Congress for the purpose, provides for the reeducation of these disabled soldiers, sailors, and marines under the joint authority of the Surgeon General of the Army and the Federal Board for Vocational Education. Reconstruction hospitals have been established in various parts of the country. In connection with these, after a man has been restored to health and furnished with the most modern type of artificial limbs, where the latter are necessary, there have been established thorough courses in various trades and occupations. While the men are taking these courses an allowance will be paid them, and their families will receive an allotment just as though they were still in active service.

There are so many instances of men who have done and are doing efficient and often remarkable work in spite of physical handicaps that it would be almost a truism to say that no man is so badly handicapped that he is not capable of doing some work as effectively as an able-bodied worker.

The Red Cross Institute for Crippled and Disabled Men, New York City, made a careful survey of the rubber industry with respect to the opportunities it offers for disabled men. This investigation was confined largely to the factories in the vicinity of New York. It was found that the rubber industry offers many opportunities for the handicapped man, and that employers were very willing to cooperate, being quite ready to accept learners. The factories are for the most part large and have plenty of light and air, certainly a distinct advantage.

Considering the possibilities in detail, it may be said that there are many kinds of work which a man who has lost a leg, but has the full use of both arms, could successfully perform. They include such work as operating riveting, spreading, washing, milling, and mixing machines; running power, sewing or power cutting-machines, or performing such work as cementing seams, helping on calenders, threading, vulcanizing, cutting, press molding, etc. The opportunities for the man who has lost an arm are somewhat limited, however, being confined to lighter work in connection with the tubing-machines, rubber-band cutters and rubber-ball machines.

Of course, there are many positions connected with the executive end of the rubber industry which a reeducated crippled man could fill in an entirely satisfactory manner. It should be understood, however, that the causes of military disability are to the extent of at least 50 per cent, of a medical nature. The disabled soldier or sailor is not necessarily a man without legs or arms. He may suffer some injury which leaves no outward sign or may be a victim of gas or shell shock. Even the blind can turn their faculties to profitable account. The employer who accustoms himself to this way of thinking broadens his view of the war cripple to his own advantage. He need not consider an operation in his factory as a possibility for a one-legged or one-armed man. A great many other forms of physical handicap involving whole men can be drawn upon.

In adapting himself to changed conditions, the injured man's mind becomes surprisingly alert. His inventive faculty is quickened, and he often turns out to be an extremely valuable worker, especially in industrial lines. Moreover, nature has its compensations. For instance, a young man who had lost a leg was placed by the Employment Department of the Red Cross Institute for Crippled and Disabled Men in a factory where gyroscopes, used for stabilizers for airplanes, were manufactured. The

young man's sense of touch became so responsive that his skill soon enabled him to earn \$75 a week by piece-work.

The work of the Red Cross Institute was started with the industrial cripple to pave the way for the war cripple. However, it has been found that these men greatly outnumber the cases of soldiers permanently hurt in battle, and that while public interest is easily focused on the war cripple it is not so easily directed sympathetically to the case of workmen who are injured in the shops. The advisability of including them in the Government's program of caring for the disabled soldier has been brought to the attention of Congress and it is possible that something will soon be done along these lines. These industrial cripples are quite as able to work if properly reeducated as the soldier. The matter is one which is already receiving considerable attention among progressive business men.

Thomas Edison, that colossus of the electrical world, has for years had to contend with the handicap of almost complete deafness. In a recent picture of Mr. Edison he is shown with Mr. F. R. Bigler, discussing the problem of reconstruction. The latter has "made good" despite the loss of his right arm and leg. He worked himself up to the position of purchasing agent for the Kansas City Gas Co. and was for a while industrial agent for the Red Cross Institute for Crippled and Disabled Men.

Another remarkable instance of pure grit overcoming almost insurmountable obstacles is that of Michael J. Dowling, president of the State Bank of Olivia, Minnesota, and formerly speaker of the Minnesota House of Representatives, who attained success in life after the loss of both legs, his left arm and the fingers of his right hand. He drives a car, rides horseback and engages in the activities of the able-bodied man.

The writer believes that American business men and manufacturers may be depended upon to give the reeducated cripple employment. They can help him in no better way than by enabling him to become a useful and self-supporting citizen. Think of the extraordinary courage, patience, ambition, and perseverance exhibited by the crippled man in reeducating himself. Surely these qualities are highly valuable in a worker who will perforce become a better thinker.

A DEMOCRATIC FORM OF RUBBER FACTORY MANAGEMENT.

The establishment of a council of industrial relations, giving representation to all employees over eighteen years of age, who are American citizens and have had six months' continuous service or one year's total service with the factory, has been announced by the Goodyear Tire & Rubber Co., Akron, Ohio.

It will take the form of an executive council consisting of five men named by the factory management, the manager and assistant manager of the labor department, two foremen to be selected by all the factory foremen, and six non-salaried employees. All questions of industrial relations will be passed upon by this body, and its first duty will be to formulate a plan to establish a legislative body somewhat along the lines of the national congress which will give representation to the employees eligible to vote. Through this legislative body more than 20,000 employees will in future have a large voice in shaping the policy of the factory on such subjects as employment, working conditions and the reconstruction problems incident to the return of business to a peace basis.

Of this important step in the policy of the company, P. W. Litchfield, vice-president and factory manager, says:

During the last two years our organization was shaped to conform with the policy of our country, and our aims and plans were set aside until the emergency was over. That time is now past, and we have started again towards the goal of a greater and a better Goodyear. After a period of drain on our resources of personnel, and meeting of problems on an emergency basis, we now find ourselves with our old men returning to us, and we are able to plan in a broad and consistent way.

Coordinating the Rubber Interests, Foreign and Domestic.

By Alfred C. Eggers.¹

MANY times of late, the attention of American manufacturers has been brought definitely to the necessity of becoming less dependent upon foreign intermediate agencies for crude rubber supplies. The automobile industry is similarly interested in the problem, as are also the rubber planter, collector and dealer.

There is no present practical method for the rubber manufacturing industry to become independent of foreign countries for its supply of crude rubber, nor would it necessarily desire this. But, if a way could be devised by which the common interests of producer, consumer and trader could be coordinated to their mutual advantage, then they need no longer be dependent upon foreign capital to keep permanent the flow of crude and manufactured rubber between them.

Because finance is essentially the life of any business, the problem above presented is, of necessity, a banking one. It would first be required that a condition of mutual faith between seller and buyer be created; and secondly, the proper machinery must be maintained to bring buyers and sellers together on an equitable basis. For these purposes a well-organized bank is the best instrument known.

How then to coordinate the interests of producer, consumer and trader to their mutual advantage! As an example, it might serve to consider the markets of North and South America; and it may be supposed that there exists a mercantile bank in each country, which to all intents and purposes is a purely local bank financing the local market, but under joint North American and local management.

Through the medium of these several local banks, the rubber markets of the Americas would be coordinated to the highest mutual advantage by a cooperative organization that would offer the following:

1. The United States offices to form an indispensable, helpful and dependable link between trade abroad and trade at home.
2. A series of affiliated banks which would operate in one country only, and be, to all intents and purposes, local banks; and would thus render an indispensable service to local producers and North American consumers.
3. A dependable structure supported by producer, consumer and trader, and rendering a like service to each, because interested in furthering the success of all.
4. A sound cooperation which would clear the path between

the South American rubber forests and the North American factory, because present hindrances, difficulties, misunderstandings and even distance would be practically eradicated by smoothly running machinery. By the friendly push at one end and the helpful pull at the other, the load of rubber must surely keep moving with promptness and regularity.

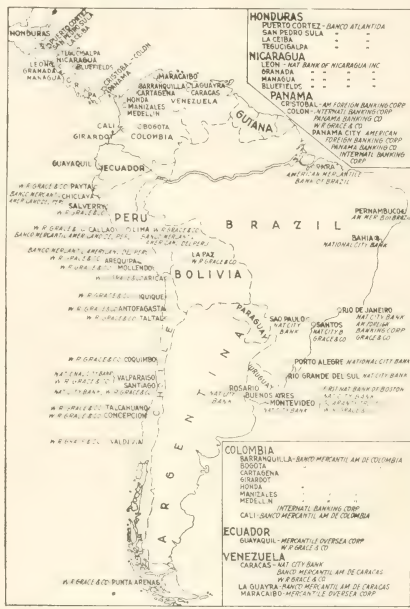
One other great advantage would be gained which the rubber manufacturer in the northern continent and the distributor in the southern could and would grasp. Simply by reversing the process, the same agency which brought the crude material northward could also return the manufactured products to the South, and thus bring the two continents into an even closer partnership.

The accomplishment of what has been outlined above is in reality a fact, for today the machinery is smoothly running to demonstrate that the rubber jungle is not impregnable to the practical rubber consumer, nor the northern factory door so impossibly distant from the rubber collector.

It will be borne in mind that the many agencies, branches and affiliated institutions are under the joint local and North American control, or, in other words, the producer and the consumer, as well as the seller and buyer are directly interested financially in the success of the bank which is their meeting place for trading. Thus the bank takes a position similar to a produce exchange or a practical clearing house which expedites trade by linking foreign and domestic thought so securely that difficulties are eradicated within its banking—its mercantile banking machinery.

Both seller and buyer receive the advantage of expert advice as regards prices, terms, shipping facilities, freight and insurance rates, so that expenses are reduced to a minimum. The rubber seller names a price at which he will sell, the buyer names a price at which he will buy, and the bank arranges all the remaining details. Lack of space prohibits recounting the numerous new and exceptional services thus rendered to buyers and sellers alike.

It is considered of special interest to rubber buyers that they are today offered the opportunity to become directly interested in the source of their crude rubber supply, and they will more readily grasp the opportunity offered them as they become better acquainted with their "clearing house," the bank. The rubber industry of the United States need no longer be dependent upon foreign countries for its raw material, because through such banks there is no reason why the industry here may not virtually become a partner of the foreign producing country.



BRANCHES OF AMERICAN BANKS IN CENTRAL AND SOUTH AMERICA.

¹Banking Commissioner, Mercantile Bank of the Americas, New York City.

Our Trading Power for Rubber.

By L. W. Atwyn-Schmidt.

IT has been one of the achievements of the late Willard D. Straight that he has drawn the attention of American industry to the fact that many of its most essential raw materials are produced outside the frontiers of the United States and that the continuous well-being of these industries makes essential special safeguards for the regular supply of these materials. India rubber belongs to these industrial raw materials. Our large rubber industry, the most important in the world, could not exist without the corresponding importation of more than 300,000,000 pounds of india rubber annually, not an ounce of rubber being grown in our own country. The position of the American rubber industry in this respect differs very little from the European rubber industry. No rubber is grown in any European country. But the English, French, Belgian, and Dutch rubber industries have at least the support of their large colonial rubber production. The German and Austrian rubber industries have operated very much under the same conditions as the American.

In normal times little discrimination exists in the distribution of the world's industrial raw materials. The British rubber growers of Ceylon or the Straits Settlements were just as ready before the war to supply German rubber factories as they were to supply English or American. Times, however, are not normal any more. The war has shown that the possession of primary raw materials gives a great strength to the country owning them, and all the countries at war have made a very effective use of the economic weapon placed in their hands by the sole ownership of important industrial raw materials. England withheld rubber from Germany, and America, cotton. Germany retaliated by not permitting the export of potash. Germany was the loser in this economic battle, because her power of withholding raw materials from her enemies was less than that of her opponents.

For a while the Allies seriously contemplated the idea of an economic alliance binding the allied powers to a mutual economic support, principally against what were then their enemies. The underlying idea of this alliance, pronounced in more or less certain terms during the famous Paris Conference, was a pooling of the mutual raw material resources which were to be used, first, for the industries of the Allies and secondarily, for the industries of other countries. The governing principle of this arrangement was the old preferential trading theory based upon a series of commercial treaties between a number of countries, promising each other special benefits, which were not to be attained by countries not being parties to these treaties. Germany had been the main culprit in creating this policy of egotism. It had made during the last twenty years a series of special tariff treaties, securing to its commerce special preferential rights in France, Belgium, Russia, Austria-Hungary, Roumania, Servia, and Japan. Other nations had become parties to these treaties by way of the so-called most favored nation clause which was inserted in many international treaties and gave to the country in question the right to participate in all preferential treatment accorded by the contracting parties to other nations.

Let us consider shortly how such a development might have affected the American rubber industry. The principal countries participating in the conference were England, France, Belgium, Russia, Italy, and Japan. Three of these countries control very considerable rubber interests in all parts of the world and supply great quantities of india rubber to the United States rubber industry. During the year 1916 when the conference took place we received 72,000,000 pounds of rubber from England, 78,000,000

pounds came directly from the Straits Settlements, and 26,000,000 pounds from other British possessions. From Belgium we had nothing and very little from France, which, however, does not mean essentially that the adherence of the two countries to the alliance would not be felt severely in the United States rubber industry. Belgium before the war had sent 11,000,000 pounds of rubber to this country and France nearly 3,000,000 pounds. As it is, of the 267,000,000 pounds of india rubber imported into the United States, 176,000,000 pounds came from British sources, and the total control exerted by the former allied power interests on the American rubber supply amounts to approximately three-fifths of the total rubber consumption of the United States rubber industry.

There is now little chance that the program of the so-called Paris Conference will be carried out. The League of Nations will doubtless replace the Conference and through it a fair distribution of all the industrial raw materials of the world may be ensured to the members of the League. Without the foundation of such a league, however, remains the menace that our big rubber industry might find itself suddenly cut off from its most essential raw material by a coalition of foreign interests. It would then be the question how far the United States would be able to import the supply of rubber and other raw materials not found in the United States, by withholding from other countries essential American raw materials.

In normal years the consumption of india rubber by our industry probably will total from approximately 200,000,000 pounds to 220,000,000 pounds. This consumption will increase from year to year with the progress of the American rubber industry. The supply will be augmented by the use of balata, guayule, reclaimed rubber and plastics. To make up the total requirements of india rubber we may probably rely on England for a supply of 50,000,000 pounds annually. The Straits Settlements will give us the same quantity and 20,000,000 pounds may be had from Ceylon and other British sources. Brazil is able to send us 50,000,000 pounds, Belgium may have available 7,000,000 pounds for American consumption and France approximately 2,000,000 pounds or slightly more. Germany, which in former years was able to send us as much as 7,000,000 pounds, may drop out from the sources of supply, as she has no rubber-producing territories of her own and is not likely to collect sufficient stocks of rubber. The Netherlands, on the other hand, may be very helpful by way of the Asiatic possessions which in recent years have largely increased their shipments of rubber to this country. Allowing for withdrawals on German and Dutch account, the Dutch East Indies should have, nevertheless, approximately 15,000,000 pounds of rubber for our purposes. Mexico may send us 2,000,000 pounds and Peru another 2,000,000. From all the other sources 10,000,000 pounds finally should be expected. This makes in all an approximate supply of 209,000,000 pounds or just enough for the wants of our rubber industry.

It may be assumed that these supplies will be given to us only too willingly. However, it is always pleasant to know that just the countries on which we rely most for our supplies have a very material interest in keeping our economic friendship, as we also have to offer certain supplies in exchange which cannot be had at present anywhere else in the world in like quality and quantity.

Cotton is the first and principal one of these materials. Of an average total production of 27,000,000 bales of cotton in the world, 14,000,000 bales are produced in the United States, 4,000,000 in British East India, 1,000,000 in Egypt, and the rest scat-

tered, including such producers as Russia, Brazil, and other minor cotton-growing centers. All the great industrial countries of the world make a very extensive use of American cotton. England consumed 3,800,000 bales of cotton during the year 1913, of which 3,200,000 bales were American. Of 1,600,000 bales consumed in Germany, 1,300,000 were American, and of nearly 1,000,000 bales consumed in France, nearly 800,000 were American. American cotton is indispensable to cotton industry of these countries. It can not be replaced by the cotton grown in other countries and the whole surplus production of the world outside the United States, for instance, would be insufficient to cover even the wants of England alone, let alone all the combined consumption of Germany, France, Austria-Hungary, Italy, and others.

There are several other materials which might be used by this country effectively as articles to be used in bargaining for rubber or any other raw material. Copper should be mentioned among these and, in a lesser respect, iron and lead, although the control of the latter two is not as complete as that of cotton and copper. Oil, also, might form an effective bargaining commodity.

It is not always the power of withholding other supplies which has been thrown in the scale by the bargaining countries but sometimes that of being a great consumer of some other

product in the sale of which the other country is very much interested. Germany, in fact, has used her own buying power very frequently for that purpose, especially in enforcing the compliance of its Russian treaty of commerce, the dispute over which nearly led to a German-Russian war many years before the outbreak of that just ended. An imperial Germany might have made a similar attempt in another direction. It might, for instance, have tried to avoid the results of the economic isolation proposed by the Paris Conference by cornering as large a part as possible of the Brazilian rubber production. Such a step would have been very detrimental to the American rubber industry in view of the general effect of the Paris alliance on the American supply of raw materials. America in such a case might very well have enforced the free marketing of Brazilian rubber by declining to take Brazilian coffee unless a quantity of rubber was also allotted to the United States industry.

Commercial agreements of this character were frequently made in former years, and it is one of the blessings expected from the constitution of the League of Nations that it may make impossible agreements of this character and thereby also remove the necessity of countries taking action to enforce their equitable rights in other markets by committing exactly the same act against which they protest.

Canadian Import Tariff on Rubber Goods.

CANADA has three classes of import tariff rates, namely, British preferential tariff, intermediate tariff and general tariff.

The British preferential tariff rates of customs duties, if any, apply to goods produced or manufactured in Great Britain or her colonies, when imported direct from any British country, but applies to such goods only when brought into Canada by ship direct to a Canadian seaport. This rate, as noted below, is markedly lower than the other two rates.

The intermediate tariff rates apply to goods which are the produce or manufacture of any British or foreign country to which the benefits of such tariff have been extended, when imported direct from such British or foreign country,¹ as herein after provided. The accompanying list gives the latest amended tariffs on rubber and manufactures thereof as compiled from the Act of April 12, 1907, and the various amendments authorized since that date:

CANADA.

¹The rates under the third column marked "General" are those applicable to imports from the United States.

Tariff No.	British Preference	Inter-mediate	General
CRUDE RUBBER, ETC.			
616.	Crude rubber and gutta percha, unmanufactured; powdered rubber and rubber waste; recovered rubber and rubber substitute	Free	Free
581.	Gum chicla and pontianak	Free	Free
BELTING, HOSE, AND PACKING.			
610.	Belting, not of leather	20%	27%
683.	Pillets of cotton and rubber, not exceeding 7 inches wide, when imported by manufacturers for their exclusive use	Free	Free
619.	Rubber or gutta percha hose and cotton or linen hose lined with rubber	30%	35%
619.	Rubber pacimar	30%	35%
619.	Rubber mats or matting	22½%	35%

¹These countries now include France, Algeria, French colonies and French Indo-China, and in this list are included manufactures of india rubber and gutta percha; a similar arrangement with Belgium and the Netherlands makes the rates for boots, shoes, and slippers of any material 27½ per cent, and manufactures of rubber and rubber cement 25 per cent.

The general tariff rates, if any, apply to all goods not entitled to admission under the two previously-mentioned tariffs. This rate is applicable to imports from the United States.

BOOTS AND SHOES

Tariff No.	British Preference	Inter-mediate	General
617.	India rubber boots and shoes	15%	22½%
569.	Stockinettes for manufacture of boots and shoes, when imported by manufacturers	10%	12½%

CLOTHING.

Tariff No.	British Preference	Inter-mediate	General
519.	India rubber clothing and clothing made waterproof with india rubber	22½%	35%
562.	Oiled silk and oiled cloth and tape or other textile, india rubber, hosiery or coated, not otherwise provided for	20%	30%
628.	Biases or suspenders or finished parts thereof	20%	35%

HARD RUBBER.

286.	Articles of hard rubber for manufacture of electric storage batteries	Free	Free
616.	Hard rubber in sheets, but not otherwise manufactured	Free	Free
652.	Combs for dress or toilet (including mane combs)	22½%	35%
653.	Brushes of all kinds	17½%	25%
755.	Hard rubber in strips or rods, but not further manufactured, when for use in Canadian manufactures	Free	Free
742.	Hard rubber unfinished in tubes, for use only in the manufacture of fountain pens, when imported by the pen manufacturer	Free	Free

TIRES FOR VEHICLES.

592.	Tires of rubber for vehicles of all kinds, fitted or not	22½%	30%
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OTHER GOODS.

646.	Belts of all kinds (except silk)	22½%	30%
575.	Elastic-round, flat and garter	25%	32½%
407.	Wire, single or several, covered with cotton, linen, silk, rubber or other material, including cable so covered	20%	27½%
660.	Clothes wringers for domestic uses, and parts	22½%	30%
688.	Artificial limbs and parts, artificial teeth not mounted	Free	Free
618.	India rubber and gutta percha not otherwise provided for	15%	25%
648.	Slipper rubber, not covered or coated	Free	Free
620.	Webbing, elastic, over one inch wide	12½%	17½%
520.	Webbing, elastic, for artificial limbs	Free	Free

The total exports of rubber goods to Canada for the fiscal year ended June 30, 1918, was valued at \$4,502,525 and included: belting, hose, and packing, \$539,496; boots and shoes, \$423,236; druggists' sundries, \$306,490; automobile tires, \$1,766,518; all other tires, \$92,707; all other manufactures of rubber, \$1,474,078.

POSSIBILITIES FOR EXPANSION IN EUROPE.

By E. H. Huxley, President U. S. Rubber Export Co., Limited.

IT is a little too early to make any very definite prophecies as to future business with Europe, as most plans cannot be made definite until the peace conference has concluded its labors

and the treaty been signed, and until the attitude of the governments of the various countries in which we do business is known, and any artificial economic barriers set up by government action are removed or made permanent.

The one great outstanding fact is the universal need of manufactured products. Where these are to be obtained and how paid for is the problem. There is scarcely a country of any importance which, to-day, is not attempting to control its imports by more or less

drastic laws and regulations; and until these are removed, or greatly modified, trade with the countries wherein they exist will be more or less curtailed. The demand and the need, however, remain and must be supplied from some source, and the natural source is the United States. Nations cannot be blamed for desiring to develop their own resources and supplying their domestic requirements as largely as possible with home products, but until these products can be produced, destroyed factories and those that have been turned to war materials must be restored. That in itself creates a substantial demand.

There is a shortage existing in most countries which cannot be supplied locally, particularly in view of the extraordinary efforts being made by those countries which produce manufactured rubber goods to maintain their foreign connections and their export trade. This is being done even at the expense of their domestic trade, and the curious situation exists, at least in England, that there is a local domestic demand which cannot be supplied by local factories and yet the government largely curtails imports. It would seem the part of wisdom to remove all artificial economic barriers and to let commercial nature take its course in the adjustment of supply and demand.

The question of the payment for goods imported is, of course, a serious one. The United States is a heavy creditor to most important European nations, and those nations, naturally, hesitate to increase their indebtedness. Trade balances cannot be restored speedily by means of imports from Europe, first, because the material is not there to be exported, and, secondly, because the United States is becoming less and less dependent upon imports of manufactured products. The cessation of import of French wines alone will be a serious handicap to France. Obviously unfavorable trade balances cannot be liquidated through the shipment of gold; first, because the United States has more gold now than is good for her, and, secondly, because any further depletion of gold reserves abroad would bring disaster there. The most feasible and likely method of payment

seems to be by heavy investment of American funds in foreign markets.

The existing situation in England is what amounts practically to an embargo against United States products, the exception being small percentage allocations, but free and unrestricted admission of colonial products. This situation is to be reviewed in September, 1919, and it is to be hoped that it will be discontinued and that the products of the United States will be again freely admitted.

France still continues to refuse pretty generally licenses for the import of United States products, even though the need for them is great. Numerous instances have been revealed where France has refused permits for the import of material, especially machinery, which could not be obtained elsewhere, and which could not be manufactured in France. It is to be hoped that relief will come after the peace treaty is signed.

Italy is refusing import licenses for United States products and advising those who have heretofore purchased in the United States to purchase in England and France. Her argument is that since she is already owing the United States great sums for credits, loans and previous imports, this indebtedness should not be increased. It is difficult to detect the advantage to Italy in owing money to France or England rather than to the United States, provided she is obliged to owe the money to some one; and it would appear a rather severe penalty to refuse trade from the United States, because the United States during the war has sent over large credits and loaned large sums of money to Italy. This situation appears to be the most indefensible, and it is hoped will be speedily discontinued.

It is interesting to observe in passing the keen interest of all business men in Europe to resume commerce. Conversation which one hears generally is not political and does not touch on the deliberations of the peace conference, but, on the contrary, is wholly commercial and wholly with a view to the speedy resumption of normal trade relations. One hears many expressions of willingness to resume trade relations with Germany, which is, of course, rather surprising, but serves to emphasize the rapidity with which events move and with which things are forgotten.

With the great potential possibilities, it will be a calamity if the United States does not benefit by the present European situation and if much of the war trade does not turn to commercial trade.

HIGH GEAR IN EXPORT TRADE.

Reach out for the export trade, is the watchword of American manufacturers, and the word goes forth from Washington that the Government, through the Bureau of Foreign and Domestic Commerce, is prepared to assist in every way it legitimately can. The United States is now a creditor instead of a debtor nation. During the past year it did an export business of about \$6,150,000,000, as against an import business of \$3,031,000,000. The month of January, 1919, showed larger exports than any other single month in American history.

Reports of special representatives giving complete descriptions of the life and customs of the people in foreign lands, together with the class of commodities they purchase, the prices and the terms, are published every day and a compact publication is issued to over 6,000 subscribers. In the past few weeks representatives of the Bureau of Foreign and Domestic Commerce have gone to Great Britain, France, Switzerland, Italy, Denmark, Norway and Sweden, Greece, Rumania, South America, Japan, and other countries. Valuable information for the rubber trade may be expected from this activity on the part of this alert government department.

"Rubber Machinery," by Henry C. Pearson, is filled with valuable information for rubber manufacturers. Price, \$6.



E. H. HUXLEY.

BALATA BELTING: ITS MANUFACTURE AND USE.

By C. A. HARRIS.

THAT balata belting is better than rubber, leather, or even cotton belting for every purpose is not true. Where water, acid, or acid fumes are present, it is, however, better than any other. It will not stand high heat, but on the other hand, the moderate heat developed by running a balata belt softens the gum a little and brings it to the surface, thus renewing the belt cover for a long time. It should never be used in rooms that are over 100 degrees in temperature, nor is it advisable to use it where it is constantly exposed to steam.

Properly made balata belting is possessed of great tensile strength and its pulling power is wonderful. It clings to the pulley better than any other material and needs no belt dressing. It also has the added advantage of running true. Furthermore no belt fasteners are needed in splicing. In making a joint the ends are simply heated until they become loose and sticky. The splice is then made on an angle of 45 degrees, stepped in about one inch to each ply, pressed down hard and ironed. When cooled it is as strong at that point as at any other.

The use of balata belting is very large for conveying purposes in mines, but especially in acid works, dye houses, bleacheries, ammonia works, slaughter houses, tanneries, breweries, and also in shoe and hat factories, and in special chemical industries.

The preparation of balata for belt manufacture is very simple. Rubber manufacturers who are not equipped for handling plastics like gutta percha and balata often do the cleaning and massing on ordinary washers and mixers. The better way, however, is to have a cutter (a circular knife is excellent) that cuts the raw blocks or sheets into strips and pieces that are more easily handled. This is done dry and cold and is much like cutting leather or rawhide. The resulting strips are then shredded by a variety of tearing machines. A common one is a spiked drum, revolving in a trough. The shredded mass is next thrown into a tub of cold water and agitated. The heavy adulterants, if there are any, sink to the bottom, while the shredded gum particles float. The partially cleansed shreds are put into a tub of hot water where with a little manipulation they unite into a plastic mass. This can be used just as soon as the water is expressed.

For the best work, however, the gum should be put into a closed washer or a masticator-washer and thoroughly washed in hot water into which steam is forced. The remaining impurities are thus freed and either sink to the bottom or are forced out through apertures in the inner walls of the washer. The

this is not absolutely necessary in belt making, but some manufacturers insist that it gives a better product.

So far, the handling of balata is practically the same as of gutta percha. It should be noted, however, that balata is softer than gutta percha and, furthermore, that it is not so easily at-

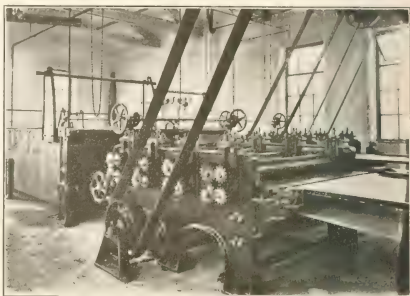


FIG. 2. BELT-STRIKING MACHINE.

tacked by the air. It also cools much more slowly so that, once heated, it can be handled and made up more easily. These facts and the further one that the crude gum is often very clean, allow of its being simply treated in hot water, in a tub washer, and dried on ordinary mixing rolls. The product is not as smooth as gutta percha, but is more elastic and adhesive.

In this connection details of balata belt-making as practiced in a European factory are very interesting. The crude balata is first washed in machines that are very similar to those employed for washing crude rubber. They are, however, of considerably lighter construction, having smooth rolls instead of corrugated. These rolls revolve at different speeds to tear the balata while it is washed in order to effect as thorough a cleaning as possible. The balata sheets, after drying, are put into a slightly warmed, jacketed mixing machine, and with the addition of benzine, and by constant stirring, are reduced to a solution. As soon as a thorough mixture has been obtained, the thick compound is transferred to a jacketed solution trough, which is fixed above a spreading machine. In this trough, which is heated, the mass is raised to a temperature that makes it sufficiently plastic to permit spreading.

The solution trough has a capacity of 40 gallons and can be closed in order to keep out dust. The belting fabric is wound on a roller provided with a brake and passes over another roller, under the solution trough, between a roller and the spreader knife. While the cloth unrolls, the balata solution is distributed over the cloth surface in front of the knife, through three cocks that are equidistant throughout the length of the solution trough.

The cloth absorbs the solution as it is spread by the knife or "doctor," which can be adjusted to regulate the thickness of the solution. The treated fabric then passes over other rollers and is led to a winding apparatus. To wind up the spread cloth, a windlass-rack is fitted to hold short lengths of pipe in its arms. These short pipes are fed as fast as the cloth advances, and by this means the sticky fabric is kept from adhering to itself as it is wound up, the windlass holding up to 600 feet of impregnated cloth, which is thus air-dried.

The fabric is spread thick on one side and thin on the other and is then transferred to a grooving and cutting machine, to be trimmed and cut to the required length and width. The material is wound on a roller which has a brake, and from this it

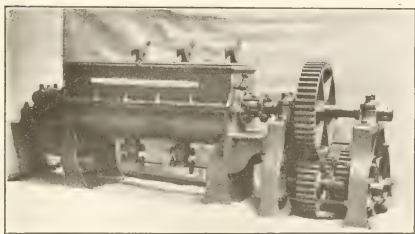


FIG. 1. BALATA-WASHING MACHINE.

cleaned mass is then put on heated rolls that express much of the water. If a thoroughly dense homogeneous mass is required, the almost dried gum is forced through a press-strainer containing a battery of sieves, each of different mesh. This removes the remainder of the water and all air bubbles. Of course,

is passed through plunger rods and over a grooved roller. The grooves are at equal distances and in them are knives which cut and trim the cloth. After this the pieces of cloth are passed through guide rollers to a wind-up roller operated by hand. The knives are interchangeable and can be adjusted at will from top to bottom, and from right to left, from groove to groove. For trimming, sharp knives are used, and for grooving, blunt round ones. The latter knives impress a very distinct line on the coated cloth where the belting will later be folded.

The trimmed and grooved fabric then leaves the winder and passes to a steam-heated warming table where the heat softens the solution and makes it sticky. As soon as it is sufficiently warmed, it is folded over where the grooving machine has made lines, with the thick coating inside. Then it is pressed together by hand-rollers and wound upon a reel at the end of the warming table, which usually consists of five heating plates, six feet wide and ten feet long, placed end to end to form a slide about 52 feet long.

The next and most important part of the work consists in stretching, coating and fluting the belting. This takes place on a stretching and coating calender. The belts are wound on a braked winding roll and then passed over a steam-heated warming roller, under a heating plate and through the stretching machines. These consist of a three-roll calender with a two-roll calender of the same size standing 6 feet behind it. The two-roll calender makes 15 per cent fewer revolutions, but has a 20 per cent faster surface travel than the three-roll calender. When the rolls are properly set, the higher surface speed of the two-roll calender causes the belting to be evenly stretched. In the stretching operation, the rolls are well heated so that the balata in the fabric may become as plastic as possible and penetrate farther into it. But the warmer the rolls, the greater the danger of the belt being made crooked. For instance, in a three-ply belt very hot rolls will easily pull one side more than the other because one or the other tends to slip. There is no standard for heat, but an experienced and observant operator always finds the right heat and accordingly adjusts the distances between rolls.

The belt is later run again through the rolls of the stretching machine. This time the rolls of the two-roll calender are not set up tight and the friction is just enough to rub against the belt surface and make it smooth. After again rolling up, the belt is prepared for its coating with balata. This often takes

passage, the upper roll takes up a part of the balata mixture and presses it against the belt. To obtain a coating of even thickness, the distance of the rolls is fixed with chucks of metal or wood, and a pair is needed for every size. These chucks are arranged on a bridge mounted on the calender, are adjustable

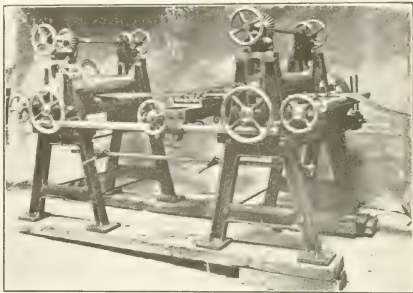


Fig. 4. BELT-TRIMMING MACHINE.

and can be exchanged. They can therefore be adjusted over the working width of the rolls according to the width of the belt and at the same time act as guides. During the coating process, the lower roll is cold, the upper being slightly warmed so that the balata mixture has the softness needed to press it on to the belt with ease. To prevent the coating from clinging to the upper roll it is continually moistened with spirit. The belt is now transferred to a table 90 feet long where it is cleaned and trimmed with knives by hand to free the edges of balata coating and of the mixture that has worked out of the inside during calendaring.

The next operation is that of grooving. This takes place on a grooving machine which consists of two horizontal rolls mounted one above the other in stands. The belt passes through these rolls once, and in order to make the grooved side glossy it is slightly moistened with water before going through the rolls. To make the grooves parallel to the edges, it is necessary to guide the belt during the operations from start to finish. The grooving machine is put up in front of a work table where the belt is inspected before it is passed as being free of factory defects.

The above practice is not, however, universal, for some manufacturers mix with balata a certain amount of rubber, and some add plastics of the refined elaterite variety. Others use only the cleaned balata. As a matter of fact, the process of balata belt making is very similar to that employed in the manufacture of rubber belts. There is this difference, however—no balata belt is vulcanized; first, because it is not necessary, and second, because it could not be done. As for the rest of the processes, the frictioning of the fabric, the making up, the stretching, the pressing for solidifying and surface, are almost identical.

BALATA SOLING IN ENGLAND.

A British branch of an American leather concern makes the following announcement in a London trade journal:

Balata, the satisfactory soling substitute. Like leather, it is adapted to be trodden under foot by the million. Light in weight, absolutely waterproof and non-slipping, easy to work through the factory, favorable in cost, economical in cutting, wears twice as long as leather. Supplied in sheets, in various substances, providing a range for all soling requirements, from the light slipper to the gent's heavy boot.

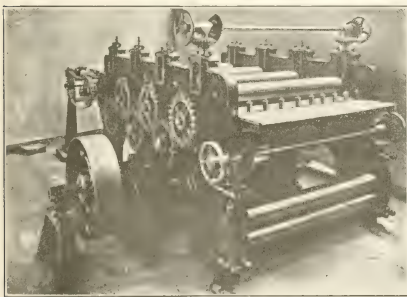


Fig. 3. BELT COVERING MACHINE.

place on the two-roll calender above mentioned, but better results are obtained with a special two-roll calender. The balata needed for coating is prepared on a mixing mill. The stretched and smoothed belt is wound on a reel, passed through the coating calender, and is rolled up again on the other side. During the

Official Cotton Standards of the United States.

AMERICAN EGYPTIAN COTTON.

THE readers of THE INDIA RUBBER WORLD are already familiar with the development of the American Egyptian cotton of the Salt River valley in Arizona and some districts of California. Those who are not can find some interesting facts in Service and Regulatory Announcement No. 41, published by the Bureau of Markets of the United States Department of Agriculture.

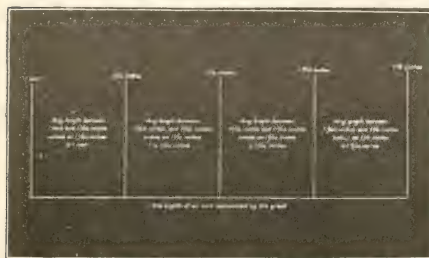


ILLUSTRATION OF STEPS FROM 1 TO 1 1/2 INCHES.

ment of Agriculture, which is mainly devoted to the announcement of official standards of grades and lengths of these and the Sea Island varieties of cotton.

When the Yuma cotton was developed from careful experimental breeding, and proved of greater strength of fiber, the Department of Agriculture established and introduced grades and lengths of staples, which have largely formed the basis for description of such cotton in transactions between cotton mills and producers.

In 1919 a single plant of distinct type was found growing in a field of the Yuma variety, at Sacaton, Arizona, from the seed of which a progeny row was grown in 1911 and more extensive plantings were made in 1912 and 1913. The most careful examinations failed to reveal any noteworthy departure from the original plant found in 1910. This variety was named Pima. The important differences between the Pima and the Yuma varieties are that the Pima has a whiter color and a longer staple. The Yuma variety has a staple from 1-7/16 to 1 1/2 inches in length, and the Pima a staple from 1 3/8 to 1 3/4 inches, or an increase of from 3/16 to 1/4 of an inch.

The grading and stapling of 2,100 bales of the 1917 crop were done by a representative of the Bureau of Markets of the United States Department of Agriculture, and material was collected for types. It was then decided to replace the tentative standards for Yuma cotton with the official cotton standards of the United States for American Egyptian cotton, made up of types of the Pima variety. Heretofore the grades of Pima cotton have been designated by the names Fancy, Extra, Choice, Standard, and Medium. In the official cotton standards for American Egyptian cotton numbers are substituted for the grade names—No. 1 for Fancy; No. 2 for Extra; No. 3 for Choice; No. 4 for Standard; and No. 5 for Medium.

Furthermore, American Egyptian cotton which in grade is between any two adjoining grades represented by types in the standards, are designated by the grade number of the higher grade, followed by "1/2"; for example, cotton between grades No. 1 and No. 2 is grade 1 1/2. Also, cotton inferior to grade No. 5 is designated "Below grade 5." The lengths of staple formerly known by numbers are designated by their actual measurements,

determined in the manner set forth in the order establishing the standards for length of staple.

SEA ISLAND COTTON.

Standards for Sea Island cotton are also established.

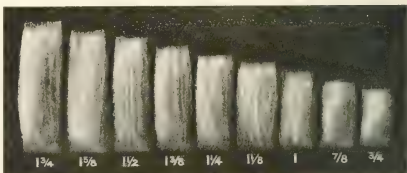
In the standards for Sea Island cotton, as in the case of American Egyptian cotton, numbers are substituted for grade names, No. 1 for Fancy; No. 2 for Extra Choice; No. 3 for Choice; No. 4 for Extra Fine; No. 5 for Fine; and No. 6 for Medium Fine.

Likewise, Sea Island cotton which in grade is between any two adjoining grades represented by types in the standards, is designated by the grade number of the higher grade, followed by "1/2"; for example, cotton between grades No. 1 and No. 2 is grade 1 1/2. Also, cotton inferior to grade No. 6 is designated "Below grade 6." The lengths of staple will be designated by their actual measurements determined in the manner set forth in the order establishing the standards for length of staple.

LENGTH OF STAPLE COTTON.

The Department of Agriculture has been making investigations for several years, looking to the establishment of standards of length of cotton. Specialists interviewed mill-owners, merchants, buyers, brokers and shippers in the North and South, and the result which met the approval of more than 70 per cent of those consulted, was that instead of the lengths of staple being designated by numbers, they are hereafter to be known by the actual measurements, in inches, of the length of the fibers, according to the standard rule, under a relative humidity of the atmosphere of 65 per cent and a temperature of 70 degrees Fahrenheit, without regard to the quality or value of the staple.

It was also determined that length of staple of less than 3/4 inch should be designated "Below 3/4"; from three-fourths to one inch should be designated in steps of sixteenths of an inch, and from one inch upwards should be designated in steps of thirty-seconds of an inch. When cotton more than three-fourths of an inch in length of staple is not actually one of the measurements specified, it is to be designated by the specified length which comes nearest under its actual measurement. An illustration of the steps from one to one and one-eighth inches, both inclusive, is shown in the accompanying graph. The following lengths specified in the standards, nine in all, are represented by



OFFICIAL COTTON STANDARDS. LENGTHS OF STAPLE FOR WHICH TYPES ARE READY FOR DISTRIBUTION.

physical types: 3/4, 1, 1 1/8, 1 1/4, 1 1/2, 1 3/4, 1 5/8 and 1 3/4. Reproductions of samples of cotton having these lengths are shown in the half-tone illustration.

As different methods of pulling staple may cause variations in results obtained by different classifiers, the Bureau of Markets has made a study of methods used by acknowledged experts in this work, and has devised a method, the adoption of which it recommends. Photographs of the various steps or successive motions involved in this method are given in the document here mentioned.

What the Rubber Chemists Are Doing.

THE AGING OF VULCANIZED PLANTATION RUBBER.

THE following abstracts of five important papers dealing with the deterioration of vulcanized rubber by aging, present the latest results of elaborate research on the part of three highly esteemed authorities, Dr. H. P. Stevens,¹ Dr. O. de Vries,^{2,3,4} and W. Spoon.⁵

RESULTS BY DR. H. P. STEVENS.

Lack of space compels omission of the curves illustrating Dr. Stevens' papers. The results in his first paper are reviewed by Dr. Stevens as follows:

Experiments were conducted on crêpe and sheet rubbers of which the vulcanized specimens were retested physically at intervals of a few months. It was shown that in those cases in which the coefficient of vulcanization exceeded 3.2 per cent, deterioration set in a short time after vulcanization, and that the higher the coefficient the more rapid the deterioration.

These experiments were extended to carry out again tests over a longer period, and to comprise a wider range of types, including rubber from matured coagulum (slabs). The mixings of 90 parts of rubber 10 parts of sulphur were cured at 35 pounds steam pressure for 2, 2½, 3, 3½, 4 and 4½ hours, and the specimens tested one week after vulcanizing and subsequently at intervals extending over 120 weeks. The specimens were preserved in the dark, or in semi-darkness, but otherwise no particular care was taken with them and they were exposed to the ordinary fluctuations of room temperature.

When comparing the results it must not be forgotten that determinations of breaking strain are subject to appreciable experimental error when the rubber is overcured and brittle or "perished."

The effect of aging on the physical properties is more evident at summer temperatures than at those of winter.

The coefficient of vulcanization was determined shortly after vulcanization and again at the conclusion of the aging period. The results were as follows:

Hours Vulcanized	RULED SHEET		UNRULED SHEET (STAY)	
	Beginning of Aging Period	End of Aging Period	of Aging Period	End of Aging Period
2	2.15	2.16	3.16	3.44
2½	2.62	2.73	4.17	4.30
3	3.05	3.33	4.93	5.11
3½	3.98	3.90	5.71	5.81
4	4.36	4.67	6.41	6.58
4½	4.73	4.96	7.01	...

These figures indicate that with coefficients of over three, there is a tendency for the coefficient to increase with the aging of the specimen, the effect being greater the higher the coefficient. It is probable that this increase is accompanied by decomposition of the rubber. It is well known that sulphuric acid is formed when rubber perishes. It appears, however, that where the coefficient is low appreciable deterioration does not set in during the period under test, and little or no increase takes place in the coefficient.

The higher the coefficient the shorter the period of increase in breaking strain. The figures are approximately as follows:

Coefficient	Period During Which Increase of Breaking Strain Takes Place	Coefficient	Period During Which Increase of Breaking Strain Takes Place
2.3	35 weeks	2	21 weeks
2.6	" "	4.2	15 "
3.1	18 "	4.9	6 "
4.0	10 "	5.7	2 "
4.4	7 "	6.4	nil
4.7	5 "	8.1	nil

These results confirm the conclusion drawn from earlier experiments that a rubber vulcanized to give a coefficient of 3.5 is certainly overcured and cannot be expected to retain its physical properties for a reasonable length of time. To secure approximate permanency the coefficient should not exceed three per cent. Finally, it is clearly seen that the maximum breaking strain cannot be obtained without overcuring the rubber to such a stage that it commences to deteriorate within a few days of vulcanization and loses tensile strength at an average rate of about one per cent per week.

In his subsequent communication, Dr. Stevens gives the results of a series of experiments exactly similar to those above reported, on smoked sheet, smoked "slab," ordinary pale crêpe, and smoked crêpe.

The figures for the coefficients of vulcanization determined at the commencement and conclusion of the aging experiments were as follows:

Hours Vul- canized	(1) Unsmoked slab		(2) Smoked slab		(3) Pale crêpe		(4) Smoked crêpe	
	Start.	End.	Start.	End.	Start.	End.	Start.	End.
2	2.66	2.57	2.82	2.92	2.91	2.26	2.11	2.25
2½	3.06	3.04	3.37	3.53	3.86	2.66	2.75	2.80
3	3.72	...	4.14	4.42	3.62	3.58	3.45	...
3½	4.33	4.38	4.81	5.63	4.27	4.28	4.17	4.21
4	4.87	5.31	5.54	6.16	4.86	...	4.92	5.11
4½	5.66	6.34	6.27	6.80	5.94	...	5.57	5.88

These figures confirm the previous conclusion, namely, that the increase with age in the coefficient is more noticeable in the overvulcanized samples. Thus, an analysis of the above figures and those given in the previous paper gives the following results:

Average Coefficients Between	Average Increase in Coefficient During Aging Period.
2 and 3	2.52 0.02
3 and 4	3.43 0.10
4 and 5	4.55 0.23
5 and 6	5.66 0.51

Tabulating the maximum breaking strains corresponding to coefficients of four to five, obtained from tests made shortly after vulcanization, we have the following:

Average Coefficients Between	Maximum Breaking Strain
2 and 3	1.52
3 and 4	1.93
4 and 5	2.90
5 and 6	5.69
over 6	6.56

These figures show clearly that the maximum breaking strain is not attained without considerably overcuring the rubber. All types of rubber, when cured to give a coefficient of 4-5, attain the maximum breaking strain within 10 or 15 weeks of vulcanization, after which they rapidly lose strength. In a year or so they become hardened and perished. On the other hand, if the vulcanization be carried only so far as corresponds to a coefficient of 2-3, there is obtained with all types of rubber a product which, although only of medium strength when freshly cured, improves on an average for about a year and then only very slowly loses strength, so that at the end of two years the rubber is still stronger than when first vulcanized.

The correlation of the coefficient and the period during which

¹H. P. STEVENS, "The Aging of Plantation Rubber," "Journal of the Society of Chemical Industry," November 30, 1918, and December 31, 1918.

²O. de Vries and W. Spoon, "Changes in Vulcanized Rubber Shortly After Vulcanization," "Archief voor de Rubbercultuur in Nederlandsch-Indië," November, 1918.

³O. de Vries, "Some Remarks on the Aging of Vulcanized Rubber," "The India Rubber Journal," January 11, 1919.

⁴O. de Vries, "Changes in Vulcanized Rubber at Elevated Temperature," "Archief voor de Rubbercultuur in Nederlandsch-Indië," November, 1918.

⁵W. Spoon, "The Aging of Plantation Rubber," "The India Rubber Journal," January 11, 1919.

increase in breaking strain takes place, when analyzed and averaged gives the following figures:

Average Coefficients Between

1	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
2		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
3			1.00	1.00	1.00	1.00	1.00	1.00	1.00	
4				1.00	1.00	1.00	1.00	1.00	1.00	
5					1.00	1.00	1.00	1.00	1.00	
6						1.00	1.00	1.00	1.00	
7							1.00	1.00	1.00	
8								1.00	1.00	
9									1.00	
10										1.00

During Which
Strain Takes Place.

The position of the breaking-strength curves is dependent on the coefficient and not necessarily on the time of cure, showing that the coefficient is the essential index of the degree of vulcanization.

The load required to produce a given elongation in sheet rubber is greater than in crepe rubber when both types are cured to give the same coefficient. The curves for elongation all slope downward, showing a gradual reduction in the final length with the period of aging. With low coefficients the reduction is very gradual; with coefficients over five the vulcanized specimens are perished before the full period of aging is completed.

The average figures are as follows:

Average Coefficients Between

and	2	3	4	5	6	7	8	9	10	
1	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
2		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
3			1.00	1.00	1.00	1.00	1.00	1.00	1.00	
4				1.00	1.00	1.00	1.00	1.00	1.00	
5					1.00	1.00	1.00	1.00	1.00	
6						1.00	1.00	1.00	1.00	
7							1.00	1.00	1.00	
8								1.00	1.00	
9									1.00	
10										1.00

Percentage Increase
in Final Length.

and	2	3	4	5	6	7	8	9	10	
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
3			0.00	0.00	0.00	0.00	0.00	0.00	0.00	
4				0.00	0.00	0.00	0.00	0.00	0.00	
5					0.00	0.00	0.00	0.00	0.00	
6						0.00	0.00	0.00	0.00	
7							0.00	0.00	0.00	
8								0.00	0.00	
9									0.00	
10										0.00

CONCLUSIONS.

These experiments illustrate the general instability of vulcanized rubber in contrast to the raw material. Plantation rubber may be stored for ten years and, when vulcanized, give results comparable with those yielded by the freshly gathered raw material. Vulcanized rubber, however carefully vulcanized, commences to change in physical properties the moment the vulcanization process is completed. When the original coefficient exceeds three, appreciable deterioration takes place in two years. This may result in a loss of 50 per cent of the tensile strength when the coefficient reaches four, and complete "perishing" with a coefficient of five or more. A reasonably permanent product of primary vulcanization can be obtained only when the coefficient does not exceed three, which figure is regarded by the author as a suitable standard for vulcanization when comparing the physical properties of different specimens of vulcanized rubber.

RESULTS BY DR. O. DE VRIES AND W. SPOON

The changes in vulcanized rubber during the first days after vulcanization have been reported by O. de Vries and W. Spoon in "Archief Voor De Rubbercultuur," November, 1918, page 814.

In order to determine if a rest of only 24 hours is ample for stabilization of the physical properties of vulcanized mixtures of rubber and sulphur, de Vries and Spoon tested a large number of samples of first-quality crepe, smoked sheet, and lower grades of plantation rubbers. The tests were made on mixtures of 92½ parts of rubber and 7½ parts of sulphur vulcanized as slabs in an autoclave in live steam at 148 degrees C. It was found that during a rest period of five days the tensile strength showed no change.

When tested 24 hours after vulcanization the stress-strain curve is found somewhat higher than when tested after intervals of 72 or 96 hours, but the difference amounts to only five or ten per cent in length at 1.30 kilograms, corresponding to an increase of two to three minutes in time of cure. The change for crepe rubber seems to be somewhat smaller than for smoked sheet or for lower grades.

Experiments to determine whether testing 24 hours after vulcanization gives results as regular and as reliable as testing after a longer period of rest showed that the figures for the position of the stress-strain curve are at least as regular and as reliable when testing 24 hours after vulcanization as compared with a rest of 72 hours.

RESULTS BY DR. O. DE VRIES

Remarking on the aging of vulcanized rubber, Dr. O. de Vries, in "The India-Rubber Journal," January 11, 1919, summarizes his results on vulcanized mixtures of 92½ parts of rubber and 7½ parts of sulphur, as follows:

The evidence seems sufficient to prove that for the above rubber-sulphur mixture there is no specially stable state of cure with a coefficient of vulcanization of nearly three per cent. The changes on aging are in a general sense the same as for mixtures cured to a coefficient of vulcanization of two or four per cent. The coefficient of vulcanization alone does not constitute a sufficient guide to judge of the aging properties. In cases where comparison is to be made of vulcanized rubbers which are not prepared according to the same procedure, both the stress strain and the coefficient of vulcanization, and perhaps other properties, will have to be taken into account to gain an insight into the state of the sample and its probable life or aging.

Aging of mixtures of 92½ rubber and 7½ sulphur at elevated temperatures (65-72 degrees C.), had the following effects:

(1.) The stress-strain curve shifted position in the same way as in ordinary vulcanization. The change during the first 24 hours was greater the shorter the time during which the sample was cured before aging. The change on further heating is practically the same for cures with a coefficient of vulcanization of two to four per cent. The change on prolonged heating becomes progressively less until brittleness is reached.

(2.) The tensile strength for a given stress-strain curve, though increasing in prolonged vulcanization, does not reach the value obtained by ordinary vulcanization. Samples with a coefficient of two, three, and four per cent first show an increase of tensile strength and later on the rubber becomes brittle.

(3.) At temperatures below 80 degrees C. the coefficient of vulcanization shows only a small increase. The physical changes in aging which in ordinary vulcanization accompany an increase in the combination of sulphur and rubber are not coupled with this chemical reaction.

For practical testing purposes the changes during the first days after vulcanization are of special interest. As the vulcanized product is not stable, a fixed period of rest must be observed before the sample is tested.

An extended study to determine the proper duration of this period of rest was made on 27 different grades of rubber, sample mixings being tested, respectively, 24, 48, 72, 96 and 120 hours after vulcanization. In the first 24 hours after vulcanization the change was great but during a further period of six days the figures did not show greater oscillations than the error of determination. A shifting in the position of the stress-strain curve is to be expected by aging during the days after vulcanization, but the change is only small.

In conclusion, the method adopted at the Central Rubber Station, Buitenzorg, Java, based on these studies, is to test 24 hours after vulcanization. This procedure is found to give regular and reliable results.

CHANGES IN VULCANIZED RUBBER AT ELEVATED TEMPERATURE.

Dr. O. de Vries summarizes on this topic as follows:⁵

The following changes in vulcanized slabs (92½ rubber and 7½ sulphur) were obtained by aging at 65 to 72 degrees C. (equivalent to 149 to 161.6 degrees F.).

1. The stress-strain curve shifted its position in a way analogous to that in ordinary vulcanization. The change during the first day was smaller the longer the specimen subjected to the aging test was cured, but during following days the changes for differently cured specimens were parallel.

2. The tensile strength changed in the same sense as in ordinary vulcanization, but the values obtained remained more and more behind those obtained in ordinary vulcanization. Rubber

⁵ "Archief Voor de Rubbercultuur," November, 1918, page 807.

not cured to its maximum tensile strength showed an increase in tensile strength in aging, but the increase was smaller than in continued vulcanization. After-vulcanization, as in ordinary vulcanization, brought the curves at last into the brittle state.

3. The coefficient of vulcanization by aging at temperatures below 80 degrees C., equivalent to 176 degrees F., increased only little. A curve obtained by aging showed a much lower coefficient than when obtained by ordinary vulcanization.

4. By prolonged aging these changes continued in the same manner without stop, though in diminishing degree. A definite final stage can in no case be reached before the rubber becomes brittle.

CHEMICAL PATENTS. THE UNITED STATES.

COMPOUNDING RUBBER WITH POWDERY SUBSTANCES.—An impalpable powder, such as lampblack, is mixed with a concreting and binding liquid such as starch paste, producing a granular condition; the water is evaporated and the dry granular lampblack incorporated with rubber. (Wilbur Clark Knowlton, and Harry A. Hoffman, Akron, Ohio, assignors to The B. F. Goodrich Co., New York City. United States patent No. 1,286,024.)

COATING MATERIAL FOR HANDLES OF SPORTING AND TRADE IMPLEMENTS AND METHOD OF APPLYING.—A coating comprising material including gutta percha and balata soluble in a suitable solvent and when applied readily drying out and leaving the material in the form of an adherent, elastic, non-absorptive surface free from stickiness under ordinary temperatures and use. (William S. Sellars, Brooklyn, and Wyatt W. Taylor, Spuyten Duyvil—both in New York. United States patent No. 1,293,949.)

ADHESIVE RUBBER COMPOSITION.—A process for producing an adhesive material which comprises mixing thickened castor oil, dissolved in a volatile solvent, with rubber-containing latex, and coagulating the mass. (Edward Mark Slocum, Medan, Province of Deli, Sumatra, Dutch East Indies, assignor to General Rubber Co., New York City. United States patent No. 1,293,957.)

PRODUCING SUBSTANCES RESEMBLING CAOUTCHOUC.—The process of producing substances resembling caoutchouc but insoluble in benzene, by polymerizing a hydrocarbon of the butadiene series in the presence of about three per cent of an oxidized but undecomposed terpene containing at least ten carbon atoms in the molecule, otherwise described as an organic substance consisting of an ozonide containing oxygen in a loosely combined state and active chemically, said organic substance being soluble in the hydrocarbon and capable of mixing with and reaching every part of it. (Henry S. A. Holt and Gerhard Stemmig, assignors to Badische Anilin & Soda Fabrik—all of Ludwigshafen, Germany. United States patent No. 1,294,662.)

THE UNITED KINGDOM.

INDIA RUBBER COMPOSITIONS.—A mixture of pure rubber, flour from waste vulcanized rubber, and sulphur with which may be mixed other material such as Pontianak, a clear sticky gum, castor oil, ground fiber, white lead and dissolved resin. The composition is intended for use in making artificial leather, floor cloth or tires, vulcanized by hot or cold process. (W. Stocks, 334 George street, Fitzroy, Victoria, Australia. British patent No. 121,136.)

WATERPROOF COMPOSITIONS.—A composition for waterproofing boots, shoes, and other leather articles, consisting of grease, gum, wax, oil, and rubber in the proportion of 25, 5, 30, 35 and 5 per cent, respectively. The grease, gum, and wax are first mixed together under heat, the oil is then added and finally the rubber. (H. C. Trenaman, 56 Catherine Street North, Hamilton, Ontario, Canada. British patent No. 121,587.)

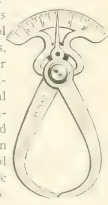
REGENERATING INDIA RUBBER.—Vulcanized rubber is regenerated by grinding, dissolving under mechanical action in the smallest possible quantity of oil, such as linseed or castor oil, which is vulcanized into factice, and exposed to a temperature of 150 degrees C. The solution is subsequently heated with as much sulphur, at such a temperature, and for such a period, as will convert the oil into factice. The product may, with or without the addition of new rubber, be vulcanized or otherwise treated as new rubber is treated. (S. van Raap, 102 Weesperzijde, Amsterdam, Holland. British patent No. 122,188.)

LABORATORY APPARATUS. IMPROVED SPIRAL BALANCE.

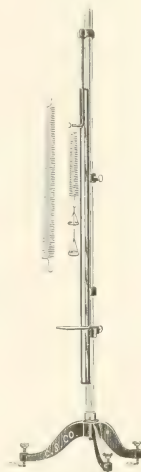
THE well-known Jolly's spiral spring balance, useful in the rubber laboratory for determining the specific gravity of compounded rubber, has been improved to facilitate the reading of the instrument. The improvement consists of a small mirror attached to the sliding index, bearing a horizontal line etched upon it, and a device for limiting the motion of the spring. The indicator attached to the end of the spring is a small metal disk which may be set very accurately in line with its own image and the etched line on the glass.

REGISTERING DOUBLE CALIPER.

The registering double caliper shown in the cut will be found a decidedly convenient tool for the testing laboratory for measuring the diameter of hose under test for expansion. Hose makers and inspectors will also find this caliper a handy tool in their departments, as it is adapted for measuring both external and internal diameters. The dimensions may be read to sixteenths of an inch on the graduated arc. Central Scientific Co., 460 East Ohio street, Chicago, Illinois.)



REGISTERING
DOUBLE
CALIPER.



JOLLY SPIRAL BALANCE.

RUBRON MINERAL RUBBER.

Rubron is a recently perfected hydrocarbon product designed for use as a preservative and filler in rubber compounding. It is a combination product based on pure asphaltum. It possesses great ductility and freedom from hardening or oxidizing effect. Its melting point is 315 degrees-F., specific gravity 1.058, and it contains two per cent of sulphur.

LIQUID CAUSTIC SODA.

Liquid caustic soda in water solution of different strengths is available to the rubber reclaiming trade. It is shipped in tank cars and used according to strength. The object is to effect a saving in manufacturing cost by avoiding complete evaporation and the use of the drums in which the solid caustic is packed. The liquid caustic is extensively used where the freight rate is not high enough to offset this saving.

REPLETE WITH INFORMATION FOR RUBBER MANUFACTURERS.—H. C. Pearson's "Crude Rubber and Compounding Ingredients."

The Rubber Division of the American Chemical Society.¹

ON April 7, 1919, the Council of the American Chemical Society, in meeting at Buffalo, New York, recognized the efforts of American rubber chemists to promote the standard of scientific attainment in their industry, by permitting them to organize as a division of the American Chemical Society. This is the first industry which has been thus honored, the other divisions being confined to the various branches of chemical science. With this recognition, there comes the obligation on the part of the rubber chemists to co-operate to the fullest extent in raising the standard of their work, so that in the future the industry may serve the public to a greater extent than it has in the past. It means that the rubber chemist must have a broader vision than ever before, to develop this industry to the place it deserves in the commerce of the country. The first meeting of the Rubber Division will take place in September of this year at Philadelphia during the meeting of the American Chemical Society.

It is worth while to call attention to the difference between the Rubber Division of the American Chemical Society and the position occupied by the old Rubber Section. It is essentially the same group of men, but previously we had no authority to choose who should lead the work of the rubber chemists, and such organization as existed was from meeting to meeting only. The supervision of the Section was entirely in the hands of the president and secretary of the American Chemical Society. Now, however, the rubber chemists have a permanent organization, with officers and Executive Committee elected by themselves; they may enroll their own members, and in general, act as a permanent body.

Membership in the Division is open to any member of the American Chemical Society who will take the trouble to write to the secretary and ask to be placed on the roll. Every member of the American Chemical Society who is interested in this work should, therefore, immediately send this notice to the secretary, A. H. Smith, Bureau of Standards, Washington, D. C. The annual dues are placed at \$1 a year to cover the cost of mailing notices and the general office work of the secretary. Anyone who fails to send in his name has no cause for complaint for not being notified of meetings, advance notice of programs, etc. The officers of the Division feel that at the first meeting in Philadelphia there should be at least 150 rubber chemists to start the new division on its way.

It should also be noted that only members of the American Chemical Society have any voice in the affairs of the Rubber Division. Those rubber chemists who have not yet joined the American Chemical Society are urged to do it at once. It needs little argument to show that an organization which has grown to 13,000 members is an organization to be encouraged and assisted in every way possible. An American chemist who does not belong to the Chemical Society is not fair to himself or to the organization, and merely because the journals of the Society are already accessible is no excuse for not joining. The dues of the Chemical Society are \$10 a year and include subscriptions to the three journals published by the Society, viz., "Journal of the American Chemical Society," "Journal of Industrial and Engineering Chemistry" and "Chemical Abstracts."

BY-LAWS.

The by-laws approved by the Council of the American Chemical Society are given below:

ARTICLE I. MEMBERSHIP.

Members of the American Chemical Society are eligible for membership in the Rubber Division of the Society shall, upon request to the secretary of the Division, be registered as a member of the Division.

ARTICLE II. OFFICERS.

Section 1. The officers of the Division shall be: a chairman, a vice-chairman, a secretary and a treasurer.

Section 2. The chairman, vice-chairman and secretary shall be members of the Division. The treasurer shall be a member of the American Chemical Society.

Section 3. The chairman and vice-chairman shall be elected by the members of the Division at the first meeting of the Division.

Section 4. At the first session of the Division coincident with the annual meeting of the Society, and following the report of the secretary, the chairman shall appoint, from the members present at the meeting, a committee of three members to prepare a list of nominations for the officers of the Division.

Section 5. The committee shall present the list of nominations immediately preceding the election of officers at the last session held during that annual meeting.

Section 6. All officers of the Division shall be elected annually by ballot at the last session of the Division held during the annual meeting of the Society, and shall take office at the close of the meeting at which they were elected. They shall hold office for one year or until their successors are elected. Voting by proxy or by letter shall not be allowed.

Section 7. The officers of the Division shall hold office for one year or until their successors are elected. They shall hold office for one year or until their successors are elected. They shall hold office for one year or until their successors are elected.

Section 8. It shall be the duty of the chairman to represent the Division in the Council of the Society, and to act as its representative in the Executive Committee, to carry into effect the decisions and recommendations of that committee, to preside at stated meetings of the Division, and to report to the Society at its regular meetings.

Section 9. In the absence of the chairman, the duties of the office shall devolve upon the vice-chairman. The vice-chairman shall be ex-officio chairman of the Committee on Research Problems.

Section 10. It shall be the duty of the recording secretary to keep a record of the proceedings of the Division and of the Executive Committee, to maintain a list of registered members, to send to registered members such notices as the business of the Division may require, and to transmit to the secretary of the Society the names of all the officers and standing committees of the Division within three weeks of their appointment; and, in like manner, to notify the secretary of the Society of any change of officers or standing committees during the year.

Section 11. The recording secretary shall be the custodian of the files of the Division. He shall have charge of the funds of the Division and shall make all disbursements, subject to the authorization of the Executive Committee. He shall report to the Division at its annual meeting.

Section 12. The Executive Committee shall conduct the business of the Division and direct its activities. The Committee shall at each general meeting of the Division and as occasion may require, hold a meeting to consider the affairs of the Division and receive reports of its committees. The voting majority of the Executive Committee shall be responsible for all expenditures which it may authorize, except so far as the action of the council shall previously have provided for such expenditures.

ARTICLE III. MEETINGS.

There shall be a meeting of the Division at each general meeting of the Society. Business affecting the organization of the Division shall be transacted only at the meeting coincident with the annual meeting of the Society. The order of business shall be as follows:

- Reading of minutes.
- Report of Executive Committee.
- Report of secretary.
- Report of committees and discussions.
- Reading of papers and discussions.
- Miscellaneous business.

And at the annual meeting:

- Appointment of Nominating Committee.
- Report of Nominating Committee.
- Election of officers.
- Unfinished business.

The regular order of business of the Division may be suspended at any session by the consent of three-fourths of the members of the Society present.

ARTICLE IV. SPECIAL COMMITTEES.

The chairman shall with the advice and approval of the Executive Committee appoint from time to time standing committees of the Division to consider, conduct, and report upon such special matters as may be delegated to them.

ARTICLE V. PUBLICATIONS.

The official organ of the Division shall be the "Journal of Industrial and Engineering Chemistry."

The Executive Committee may at its discretion provide for the issue of other non-serial publications for distribution to registered members of the Division or for sale. Such publications must be approved by the Council of the American Chemical Society.

ARTICLE VI. ASSESSMENTS.

The Executive Committee may at its discretion impose dues not to exceed one dollar (\$1) per year upon registered members of the Division, said dues to be collected by the secretary, and the receipts therefrom to be devoted to the purposes of the Division.

ARTICLE VII. AMENDMENTS.

These by-laws may be amended at any annual meeting of the Division by a three-fifths vote of the registered members present, provided two weeks' notice of the proposed amendment with the text thereof has been sent to the registered members of the Division. Amendments to be effective must be approved by the Council and accepted by that body as not inconsistent with the constitution and by-laws of the Society.

¹—By John B. Tuttle, assistant chief chemist, Firestone Tire & Rubber Co., Akron, Ohio.

WEIGHTS OF RUBBER TUBING.

By F. L. Finkham

THE accompanying table of weights of cylinders of water has been prepared to facilitate the computation of theoretical weights of rubber tubing of one inch outside diameter and smaller. Rubber tubing is usually specified by the inside diameter and wall thickness and the following is an example of the method of using the table:

Required the theoretical weight of 100 feet of tubing 9/32-inch inside diameter by 1/16-inch wall having a specific gravity of 1.77.

Inside diameter of tubing plus twice the wall thickness = 9/32-inch + 1/16-inch + 1/16 = 13/32-inch = outside diameter of tubing. In column "B" we find 13/32-inch and opposite this diameter in column "H" it is found that the weight of a cylinder of water of the same diameter 100 feet long is 5.614213 pounds. In column "H" opposite 9/32-inch it is found that the weight of a cylinder of water of that diameter 100 feet long is 2.691024 pounds. Subtracting the smaller cylinder from the larger we have: 5.614213 - 2.691024 = 2.923189 and this multiplied by the specific gravity, i. e. 1.77, = 5.174 pounds, the required weight per 100 feet. The weight per 100 feet being found, it is of course easy to find the weight of any number of feet.

From this it will be seen that, the specific gravity being given, the theoretical weight of any of the 2016 sizes of tubing within the range of the table may be computed rapidly and accurately.

WEIGHTS OF CYLINDERS OF WATER 100 FEET LONG OF VARIOUS DIAMETERS FROM 1/64-INCH TO 1-INCH INCLUSIVE.

Diameters of Cylinders in Inches						Decimal Equivalents.	Area of Cross Section in Square Inches.	Weight of Cylinders of Water of Given Diam. in Pounds (100 Feet Long.
64ths.	32nds.	16ths.	8ths.	4ths.	2nds.			
A.	B.	C.	D.	E.	F.	G.	H.	I.
1.....						.05163	.00019	.008229
2.....						.01325	.00077	.023351
3.....						.04688	.00273	.074931
4.....	1					.06250	.00307	.127970
5.....		1				.07812	.00479	.207468
6.....			1			.09375	.00690	.298858
7.....				1		.10937	.00939	.406770
8.....					1	.12500	.01227	.531448
9.....	4					.14063	.01553	.672648
10.....		4				.15625	.01917	.830306
11.....			4			.17187	.02320	1.004856
12.....				4		.18750	.02761	1.195866
13.....					4	.20312	.03240	1.403334
14.....						.21875	.03758	1.627695
15.....						.23437	.04314	1.868514
16.....	8					.25000	.04909	2.126235
17.....		8				.26562	.05541	2.399662
18.....			8			.28125	.06213	2.691024
19.....				8		.29687	.06922	2.998112
20.....					8	.31250	.07670	3.322092
21.....						.32812	.08456	3.662169
22.....	11					.34375	.09281	4.019861
23.....		11				.35937	.10143	4.394321
24.....			11			.37500	.11045	4.784399
25.....				11		.39062	.11984	5.190605
26.....					11	.40625	.12962	5.614213
27.....						.42187	.13978	6.054263
28.....	14					.43750	.15033	6.511213
29.....		14				.45312	.16126	6.984662
30.....			14			.46875	.17257	7.474490
31.....				14		.48437	.18427	7.981249
32.....					14	.50000	.19635	8.504107
33.....						.51562	.20882	9.043879
34.....	17					.53125	.22166	9.600715
35.....		17				.54687	.23490	10.174176
36.....			17			.56250	.24850	10.763321
37.....				17		.57812	.26251	11.370043
38.....					17	.59375	.27688	11.992448
39.....						.60937	.29163	12.631278
40.....	18					.62500	.30680	13.288167
41.....		18				.64062	.32233	13.961015
42.....			18			.65625	.33824	14.650222
43.....				18		.67187	.35455	15.356553
44.....					18	.68750	.37122	16.078578
45.....						.70312	.38820	16.749923
46.....	19					.71875	.40574	17.452732
47.....		19				.73437	.42358	18.184636
48.....			19			.75000	.44190	18.943562
49.....				19		.76562	.46039	19.740778
50.....					19	.78125	.47937	20.562856
51.....						.79687	.49882	21.401826
52.....	20					.81250	.51849	22.256893
53.....		20				.82812	.53863	23.129573
54.....			20			.84375	.55919	24.021919
55.....				20		.85937	.58004	25.125157
56.....					20	.87500	.60132	26.044853

57.....						.89063	.62300	26.983874
58.....						.90625	.64504	27.938488
59.....						.92187	.66748	28.910007
60.....	21					.93750	.69029	29.898393
61.....		21				.95312	.71350	30.903682
62.....			21			.96875	.73708	31.926039
63.....				21		.98437	.76106	32.963640
64.....					21	1.00000	.78540	34.017873

THE INFLAMMABILITY OF GAS BLACK.¹

By Alan L. Schmitt, assistant chemist at the Bureau of Mines.

THE following is an account of inflammability tests made on a sample of gas black submitted to the Bureau of Mines by The B. F. Goodrich Co., Akron, Ohio. It is likely that this gas black was produced by the incomplete combustion of natural gas. The sample was first sent to the coal laboratory for the analysis regularly given to coal dusts which are to be tested for explosibility. The results of the analysis of the sample as received follow:

	Per Cent.		Per Cent.
Moisture	1.66	Fixed carbon	92.04
Volatile matter	6.14	Ash .....	.19

It is to be noted from this analysis that the volatile content is very low, also the moisture content. It was impossible to obtain a true size-test since the material balled up and would not pass through the screens. Microscopic examination shows it to be very finely divided.

GENERAL DISCUSSION OF THE EXPLOSIBILITY OF THE DUST.

It has been established in the experimental mine of the Bureau of Mines at Bruceton, Pennsylvania, that a mixture of 200-mesh Pittsburgh coal dust with shale dust, in the proportion of 30 per cent coal to 70 per cent shale, will propagate an explosion. The volatile content of this mixture is about 12 per cent, nearly 100 per cent higher than that of gas black. While this coal dust mixture is about 15 per cent carbon, the gas black is 85 per cent carbon. It is apparent, that if the gas black is explosive, its explosive properties will be due to the finely divided carbon rather than to the volatile content. Generally speaking, the finer a dust, the more easily it is ignited. In connection with certain factory explosions, C. Engler² has recorded experiments on the inflammability of soot. He could not explode a mixture of air and soot, but found that a mixture of gas and air otherwise non-explosive could be made to explode by introducing a soot cloud.

EXPERIMENTAL WORK.

To get a relative idea of the inflammability of the dust, a cloud was blown from a glass tube across the flame of a Bunsen burner. No inflammation was obtained, the particles directly in the flame appeared to burn. This seemed to indicate that considerable difficulty would be encountered in getting an ignition of the dust.

Tests were then made with the Clement-Frazer apparatus. This apparatus (described in Technical Paper 141 of the Bureau of Mines) consists essentially of a small electrically heated platinum coil within a glass globe. In it a sample of dust is blown up against the coil, and the pressure of the explosion, as recorded by a pressure-indicator, is taken as an index of the inflammability of the sample. In this case, 100 and 300-mg. samples of the gas black were projected up against the coil, and in spite of the fact that the coil was heated to 1200 degrees C., no inflammation took place. This test cannot be regarded as conclusive, for, although this apparatus has been found to be very efficient in testing highly inflammable coal and other dusts, it has failed to ignite a number of dusts undoubtedly

¹Published by permission of the Director of the Bureau of Mines.²C. Engler, "Engineering News," volume 14, 1885, page 299; "Abstract Journal," Society of Chemical Industry, volume 8, page 171.

very inflammable. This was the case, for example, with aluminum dust (see Technical Paper 152 of the Bureau of Mines). Probably the failure to ignite these dusts is due to the fact that the heat coil has too little heat capacity to heat the dust sufficiently in the short time of contact. Experiment seems to justify this explanation, since aluminum dust, when poured into or blown across a small earthenware dish heated to 800 degrees C. has been found to ignite readily, with a blinding flash. This latter test was tried with the carbon black, but, when poured into a dish heated to 1100 degrees C., this dust gave no ignition whatever.

There is being developed in the Pittsburgh laboratory a dust explosion gallery in which it is hoped that the explosibility tests at the experimental mine can be duplicated. The gallery is not yet completely standardized, but the work has been carried far enough so that tests of finely divided dusts can be made. In this gallery a prearranged dust cloud is formed by the explosion of a small charge of powder which blows the dust into the gallery from a number of jets arranged throughout the length of 14 feet. A second powder shot ignites this dust cloud. Very inflammable dusts are ignited by a quiet flame produced by the burning of ten grams of rifle powder piled loosely on the floor of the gallery at the rear. Dusts not so inflammable can be ignited under high pressure in the gallery. This pressure is obtained by stopping down the front end of the gallery and greatly increasing the force of the powder shot through loading the powder into a small cannon.

It was found that the gas black would easily ignite and readily propagate a flame under the conditions first described, when the gallery was loaded with 12-gms. per cubic foot of space. This easy ignition was probably due to the fact that the concussion of the dust-raising shot separated the gas black and caused a good mixture with the air.

Experiments were then conducted to determine the amount of shale dust which it was necessary to add to the gas black to make it non-explosive under the conditions at the experimental mine. This was done in order to make a comparison of its explosibility with that of Pittsburgh coal dust. By using the second method outlined for the experimental gallery, it was found that a mixture of 60 per cent by weight shale dust and 40 per cent gas black would just fail to explode under mine conditions. Since the corresponding mixture of shale dust and coal dust is 75 per cent shale and 25 per cent coal, the gas black appears to be nearly as inflammable as coal dust, if the right conditions are obtained for its ignition.

SUMMARY OF CONCLUSIONS.

The above experiments show clearly that the sample of gas black is not easily ignited, but that, if conditions are right for ignition, it is very explosive. In other words, the gas black can be classed with dangerous factory dusts.

COMMITTEE ON STANDARDIZATION OF PHYSICAL TESTS OF RUBBER GOODS APPOINTED.

J. B. Tuttle, chairman of the Rubber Division of the American Chemical Society, announces the following Committee on the Standardization of Physical Tests of Rubber Goods:

Professor H. E. Simmons, University of Akron, Akron, Ohio, chairman; Earl L. Davies, The Goodyear Tire & Rubber Co., Akron, Ohio; W. W. Sanders, Empire Rubber & Tire Co., Trenton, New Jersey; Joseph H. Russell, Rubber Regenerating Co., Naugatuck, Connecticut; Helen C. Gillette, Prest-O-Lite Co., Indianapolis, Indiana.

NEW YORK TO HAVE LIBERTY LOAN PAGEANT OCTOBER 24.

The Publicity Department of the Liberty Loan Committee of New York has established a Parade Pageant Bureau to arrange for a pageant parade under the auspices of the committee on October 24.

The object of the parade is to symbolize the various elements that make up American life.

All merchants and manufacturers are invited to get in touch immediately with the Parade Pageant Bureau.

A DETERMINATION OF THE RATE OF SETTLING OF 200-MESH LEAD OXIDE IN RUBBER CEMENTS.

By S. Albert Kaufman, S.B.

ALTHOUGH a large percentage of the particles in 200-mesh lead oxide (litharge) would have a diameter less than the opening of a 200-mesh screen, which is 0.074 mm., yet by assuming that all the particles have a diameter equal to the opening mentioned above, the worst possibility is taken into consideration, consequently working in a factor of safety into the calculations.

The formula which enables us to calculate the desired result is the so-called Stokes' formula.

$$v = \frac{2R^2(S-S')G}{9\eta}$$

Where

v = Settling velocity in cm. per second.

R = Radius of particle = 0.037 = mm.

S = Specific gravity of particle = 9.39.

S' = Specific gravity of liquid = 0.74.

η = Viscosity coefficient of the liquid.

G = Gravity constant = 980.

Before calculating v, the coefficient of viscosity of the cement was necessary. This was easily obtained by means of the following formula:

$$\eta = \frac{\pi Pr^4}{8 l V}$$

P = Difference in pressure between top and bottom of the tube.

r = radius of the tube.

l = length of the tube.

V = volume per second passing out of the tube.

η = coefficient of viscosity.

The viscosity coefficient for water being known as .001, that for our cement could easily be determined by means of a burette and stop-watch, whereby V could be found for both water and the cement. After correcting P for the specific gravities of water and cement, η for cement was readily determined.

25 cc. of water passed through the burette in 13 seconds.

25 cc. of cement passed through the burette in 634 seconds.

$$V. \text{ water} = \frac{25}{13} = 1.925 \text{ cc. per second.}$$

$$V. \text{ cement} = \frac{25}{634} = 0.039 \text{ cc. per second.}$$

$\frac{\pi Pr^4}{8 l V}$	P cem.	0.74
η_{cement}	V cem.	0.039
$\frac{\pi Pr^4}{8 l V}$	P H ₂ O	1
η_{water}	V H ₂ O	1.925

$\eta_{\text{cement}} = 0.361$.

Substituting this value in Stokes' equation.

$$v = \frac{2R^2(S-S')G}{9\eta}$$

$$= \frac{2(0.0074)^2(9.39-0.74)980}{9(0.361)}$$

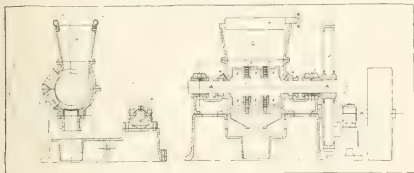
$$v = 0.071 \text{ cm. per second.}$$

$$v = 255 \text{ cm. per hour.}$$

New Machines and Appliances.

A NEW CRUDE-RUBBER WASHER.

FROM the Far East comes a mechanical development in washing-machine construction that owes its origin to the needs of rubber planters for an efficient rubber-scrap washer. For several years this machine has given satisfactory results in washing the various grades of plantation scrap and now



THE U. E. RUBBER WASHER.

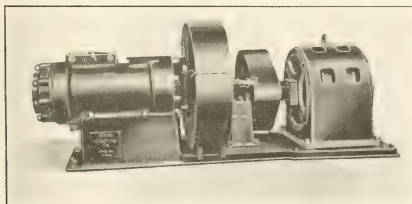
it is being used in rubber factories in England for washing Pará, Africans, Centrals, Maniçobas, and in fact all kinds of material containing crude rubber.

The mechanical principle involved is that of pressing the rubber across a closely perforated steel grating during the milling operation, the design of the grating permitting the ejection of impurities while the rubber is retained. The arrangement of the disks, division plates, and steel cutters that cut and disintegrate the rubber is shown in the illustration. The rotar shaft, disks, and collars, *A*, *B*, and *C*, respectively, are made in one solid casting, the removable steel cutters *D* being attached to the back-plate. Other principal parts comprise the division plates *E*, that are cast solid with the back-plate, a three-sectioned grating *F*, hopper *G*, water seal bearings *H*, outer bearings *I*, gear wheel and pinion *J* and *K*, friction clutch *L*, driving shaft *M*, and water spray fitting *N*. (United Engineers, Limited, Singapore, Straits Settlements.)

THE ALLEN TWELVE-INCH TUBING MACHINE.

Insistent demands from rubber manufacturers for larger production and greater efficiency in forcing machines have resulted in marked development in the American tubing machine. The accompanying illustration shows an example of the large size and improved construction that are necessary to meet the requirements of modern rubber mills.

It is a 12-inch machine, driven by a three-bearing motor with a raw-hide pinion and wide-gear faces, insuring quiet operation.



A TWELVE-INCH TUBER.

Vertical gearing has been eliminated and the shafts are carried in ring-oiled bearings. The low type of design facilitates feeding, the center of the machine being 33¾ inches above the floor

and the top of the feed box, 13¾ inches higher. The importance of this point can be realized when it is known that a 10-inch machine running on double tread solid tires has a capacity of 165,000 pounds per day. The rubber when entering this machine has a temperature of about 80 degrees C. and tests have shown an increase of only 5 degrees C. in the finished product. This efficiency is due to the improved method of regulating the temperature of the cylinder and worm.

The machine is also built for use as a strainer, having a double strainer 13½ inches in diameter by 17 inches long.

The 12-inch machine weighs 27,000 pounds and occupies a floor space of 6 feet 3 inches by 12 feet 8 inches. Motor of from 75 horse-power to 100 horse-power is required, depending on the speed of the machine and the class of work to be produced. (Allen Machine Co., Erie, Pennsylvania.)

A ROTARY HAND-PUMP.

The manufacturer who has liquids in bulk will appreciate the convenience of this rotary pump for emptying barrels or transferring from one container to another. Discharge may be taken at the pump for filling oil cans or vessels or may be carried through hose to vats or tanks. When the pump is intended for use with steel drums having threaded bungs, a special bung-holder is furnished to order, this holder being conical and with a taper thread suitable for any usual bung tapping.

Each outfit is furnished complete with suction pipe, adjustable bung-holder, hose coupling and tank hook as illustrated. Hose



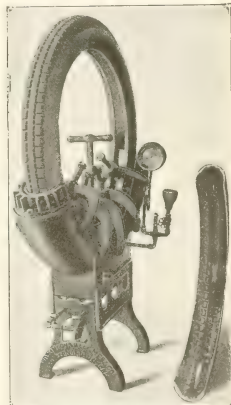
THE RUMSEY PUMP.

is not regularly included but can be supplied to order in any length desired. (Rumsey Pump Co., Ltd., Seneca Falls, New York.)

PERFECTED NEW MODEL STEAM VULCANIZER.

Retreading casings and providing for plain, ribbed and non-skid treads, by the use of specially designed molds, is the province of the vulcanizer here pictured.

This machine is equipped with an aluminum non-skid or ribbed-tread matrix and a radiating insulated flange to protect the tire from over-curing at the laps. It has a self-contained boiler and is also equipped with steam safety valve and gage. There are three models, H, K, and L. With its use, it is claimed, the tire man is able to rebuild an old casing into an apparently new tire, adding from 2,000 to 5,000 additional miles at a very nominal cost. (Wilkinson Vulcanizer Manufacturing Co., San Bernardino, California.)

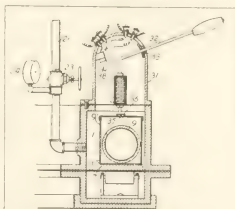


A NON-SKID RETREADING VULCANIZER.

MACHINERY PATENTS.

MACHINE FOR PRESERVING PRESSURE IN TENNIS BALLS.

CONTAINERS for tennis balls and other objects containing fluid under pressure are sealed under pressure by this machine. Each object is placed in a container having a fluid inlet



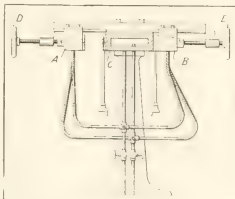
MACHINE FOR PRESERVING TENNIS BALL PRESSURE.

opening, and the containers are placed in a common chamber supplied with fluid under pressure, the containers being sealed hermetically when the required pressure is reached. As shown, the containers 9' for the balls 9 are placed on a movable platform 7 in an annular chamber 1 adapted to be closed by a hinged door. Fluid under pressure is introduced into the chamber through pipe 21 having a valve 23 and a pressure gage 24, the fluid entering the containers through an opening 35 over which is placed a disk 36 of solder. The disks of solder on the containers are fused in succession, as the platform 7 is rotated, by an electrically-heated soldering-iron 32 movable through a resilient washer 33 in a dome 31 provided with an electric lamp 38 and a window. When the soldering is completed, the pressure in the chamber is released and the containers are removed through the hinged door. (F. W. Stockton, 3132 Avalon street, Pittsburgh, Pennsylvania. British patent No. 122,483.)

MACHINE FOR VULCANIZING RUBBER ARTICLES.

This invention provides means for closing the openings in hot-water bottles through which the core has been removed. The illustration is a side-elevation of the central cross-section of the machine that may be made of suitable length for simultaneously curing a number of articles.

In operating this machine the movable platens *A* and *B* are separated from the stationary platen *C*, by means of hand-wheels *D* and *E*. Steam being applied to the platens, the bottles are suspended, mouth downward, on dowel pins arranged on both sides of the central platen.



HOT-WATER-BOTTLE VULCANIZER.

The movable platens are then brought in contact with the central platen whereby the bottle-ends are cured by heat and pressure. (Jeremiah L. Mahoney, New Haven, assignor to The Goodyear's India Rubber Glove Manufacturing Co., Naugatuck—both in Connecticut. United States patent No. 1,295,087.)

OTHER MACHINERY PATENTS.

THE UNITED STATES.

- NO. 1,285,833. Interlocking mold for making tires. C. Wattleworth, assignor to The Goodyear Tire & Rubber Co.—both of Akron, O.
 1,294,165. Thermometer for measuring temperature in mixing machines, etc. L. C. Reese, assignor to Werner & Pfleiderer Co., Inc.—both of Saginaw, Mich.
 1,294,681. Tire-wrapping machine. G. H. Lewis, assignor to The Fisk Rubber Co.—both of Chicago Falls, Mass.
 1,294,865. Pressure device for vulcanizing rubber tires. D. E. Booth, Tulsa, Okla.
 1,295,596. Apparatus for treating rubber articles. R. B. Price, New York City, assignor to the Rubber Regenerating Co., Naugatuck, Conn.

- 1,295,603. Interlocking vulcanizer. S. L. L. Avelar, assignor to W. A. Wendecker, R. J. Vincent, and H. J. Davys, all of Sydney, Australia.
 1,296,092. Battery in mold. J. I. Krieger, Akron, O., assignor to The E. F. Goodrich Co., New York City.
 1,296,096. Gum-straining machine. W. A. Lawrence and W. Law, Hartford, Conn., assignors to W. A. Lawrence and W. Law, Hartford, Conn., both of Hartford, Conn.
 1,296,112. Gum-straining machine. K. E. Peller, Hartford, Conn., assignor to W. A. Lawrence, W. A. Lawrence, Hartford, Conn., and W. A. Lawrence, Hartford, Conn., both of Hartford, Conn.
 1,296,112. Tire vulcanizer. W. F. Ray, Chicago, Ill.
 1,296,112. Vulcanizing apparatus—improvements. J. L. James and A. W. Adams—both of Alameda, Calif.
 1,296,762. Machine for making tire casings. J. E. Carls, North Kingston, R. I., assignor to J. M. Gilbert, New York City.
 1,296,990. Bead-cementing and reeling machine. G. McNeill, assignor to Morgan & Wright—both of Detroit, Mich.
 1,296,991. Bead-wrapping apparatus. G. McNeill, assignor to Morgan & Wright—both of Detroit, Mich.
 1,297,186. Tire-deflating machine. H. P. Kraft, Ridgewood, N. J.
 1,297,226. Sectional core for tires. J. H. Nesbitt and J. C. Lauritzen, assignors to Hixson and Nesbitt, assignors of 1-3 to said Lauritzen, and 2-3 to The Williams Ironing and Machine Co.—all of Akron, O.

REISSUE.

- 130-1. Apparatus and process for making hollow rubber articles. F. T. Roberts, Cleveland Heights, assignor to the Armar Co., Cleveland—both in Ohio.

THE DOMINION OF CANADA.

- 1,295,777. Tire-builder's hand-tool. The Canadian Consolidated Rubber Co., Limited, Montreal, Que., assignee of W. Thompson, Detroit, Mich., U. S. A.
 1,295,788. Machine for making inner tubes. The Goodyear Tire & Rubber Co., Akron, assignee of E. A. Hall, executor, Stow, Summit—both in Ohio, U. S. A.
 1,295,796. Sole-cutting machine. The Miner Rubber Co., Limited, Granby, Que., assignee of E. L. Patten, Malden, Mass., U. S. A.
 1,295,839. Core for tires. V. L. Cox, Akron, O., U. S. A.
 1,295,879. Core for tires. C. B. Reynolds, Sausalito, Calif., U. S. A.
 1,295,973. Core for tires. C. F. Ames, Akron, O., U. S. A.
 1,295,973. Core for tires. T. Mingley, Sr. and Jr., inventors, both of Columbus, O., U. S. A.
 1,295,973. Tubing machine. The Canadian Consolidated Rubber Co., Limited, Montreal, Quebec, assignee of W. J. Steine, Elmhurst Heights, N. Y., U. S. A.

THE UNITED KINGDOM.

- 1,139,044. Apparatus for the continuous manufacture of joint-making packing. Potter's Asbestos Co. and A. F. Stafford, Duke street, Rochdale, Lancashire.
 1,222,065. Gear-cutting mechanism for calender rolls. R. and J. Bridge, Castleton Iron Works, Castleton, Lancashire.
 1,222,067. Gear-cutting mechanism for calender rolls, etc. R. and J. Bridge, Castleton Iron Works, Castleton, Lancashire.
 1,222,137. Machine for making tires. E. Hopkinson, 3750 Broadway, New York City, U. S. A.

NEW ZEALAND.

- 1,285,555. Tire-making machine. The Goodyear Tire & Rubber Co., assignee of W. B. Harrell and E. A. Hall, widow and executrix of E. A. Hall, deceased—both of Akron, O., U. S. A.
 1,285,556. Tire-making machine. The Goodyear Tire & Rubber Co., assignee of W. B. Harrell and E. A. Hall, widow and executrix of E. A. Hall, deceased—both of Akron, O., U. S. A.

PROCESS PATENTS.

THE UNITED STATES.

- NO. 1,294,063. Method of constructing hollow annular web for cord tires. F. S. Dickinson, New York City. (Original application divided.)
 1,294,330. Method of making cases for pneumatic tires. F. B. Carlisle, Providence, R. I., assignor to J. M. Gilbert, New York City.
 1,294,594. Vulcanizing rubber articles in envelopes impervious to gases. R. B. Price, Mishawaka, Ind., assignor to Rubber Regenerating Co., Naugatuck, Conn.

THE DOMINION OF CANADA.

- 1,289,454. Forming tubular cord fabrics for tire casings. Gatta Perella & Rubber, Limited, assignee of J. H. Coffey, Sr. and Jr.—all of Toronto, Ont.

THRIFT AMONG RAYBESTOS EMPLOYEES.

The Raybestos Savings Club is a novel scheme inaugurated by the Raybestos Co., Bridgeport, Connecticut, its object being to promote thrift among employees and to get a better and more nearly permanent class of men and women operatives for the company. The plan is to deduct from 50 cents to \$2 per week, as the worker elects, from each weekly pay envelope to be placed to his account in a local bank. The money will not only draw the regular savings bank interest, but at the end of every year the Raybestos Co. will also pay to each worker who has saved 50 cents or more every week an additional 10 per cent of the total amount. About 75 per cent of the employees of the company are taking advantage of the plan, their savings averaging about \$2 per week per person.

New Goods and Specialties.

RUBBER-FINISHED VACUUM BOTTLE.

THE handicaps of the ordinary type of vacuum bottle are said to be overcome in the type shown here. Instead of fragile glass, the bottle is made with non-breakable welded steel vacuum walls. The usual glass filler or container is done

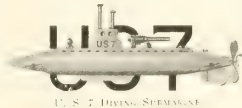


THE "FERROSTAT."

away with and its place is taken by a highly glazed flexible enamel fused to the steel shell. There are, therefore, no removable parts but the cork and the cup which forms the cover. There are also no unsealed openings at the neck, into which liquids may leak. The type of bottle shown in the accompanying illustration is surfaced with dull-black rubber composition applied to the steel and baked. Another style is finished in nickel and a third has a tan leather covering. The cup on all is heavily nickel-plated, and only first-class materials are used throughout. The bottle is made in one and two-quart sizes, the latter being successfully possible because of its non-breakability. Liquids may be kept hot for 20 hours and cold for over 40, it is claimed, by the use of the "Fermostat" non-breakable bottle, as it is called. The one-quart size weighs approximately 2¾ pounds and the two-quart, 4¾. (Stanley Insulating Co., 43 Exchange Place, New York City, and Great Barrington, Massachusetts.)

TOY SUBMARINE.

A new toy submarine is one of the recent developments of the toy-makers. It is constructed of metal and has a motor made of a rubber band which is easily replaced. By a simple adjustment, the submarine can be made to run on top of the water or submerged, straight ahead or in circles. It will dive and rise to the surface, and shoot a projectile from the gun on its deck. (American Toyland Creators, Inc., Brooklyn, New York.)



U. S. 7 DIVING SUBMARINE.

A STEEL-CORED GOLF BALL.

A new golf ball has been devised which, it is claimed, goes straight when started straight, due to its perfect roundness and a steel core in its exact center which thereby provides a fixed center of gravity. Air chambers or indentations on the surface, arranged according to a scientific plan, offer a minimum of resistance to the wind. The outer covering is of rubber and is tough and durable as well as resilient. The ball is one of the products of the mechanical goods division of the United States Rubber Co. (Thomas E. Wilson & Co., Chicago.)



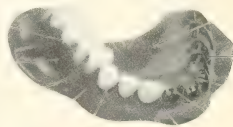
U. S. "NORRIS" GOLF BALL.

"SAFEPAK KREPEKRAFT" FOR WRAPPING TIRES.

An elastic tire-wrapping paper, put up in narrow strips suitable for winding around tires so as to conform to their shape and make an absolutely smooth wrapping, is waterproof and made in colors to add to the attractiveness of the package. (SafePack Mills, 727 Atlantic Avenue, Boston, Massachusetts.)

A ONE-RUBBER DENTURE.

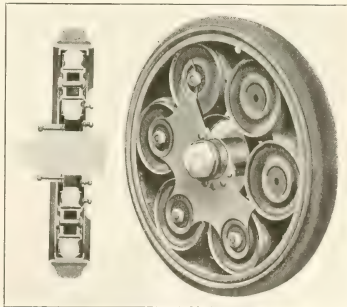
The latest development of rubber for dental use has resulted in what is known as pink denture rubber. Because of the difficulty formerly experienced in obtaining a natural-looking pink rubber that was also sufficiently resilient and strong enough to hold the pins of artificial teeth, it was usual to employ a base-plate rubber of red, maroon, brown, or some other color, and veneer it with another rubber nearer the color of the gum tissue but not having the qualities required in the base plate. The new "pink denture rubber" shown in the accompanying illustration possesses tensile strength, density, and resilience, as well as the natural pink color of the gums throughout. It is easily packed by hand in the unvulcanized state, and vulcanizes and polishes by the ordinary methods. Varying tones of pink can be obtained by exposing the finished plate to sunlight, the process being called solarization. Of this rubber, the entire plate can be made in one piece. The illustration shows a denture made in this way, from which half of the porcelain teeth have been removed by dissolving the rubber, the object being to show the retention of the tooth pins and how the teeth are surrounded at the points of attachment by the one homogeneous plate of rubber. The material used in the manufacture of this denture is first latex crêpe. (The S. S. White Dental Manufacturing Co., 211 South Twelfth street, Philadelphia, Pa.)



PINK DENTURE RUBBER.

ANOTHER RESILIENT WHEEL.

Here is shown a wheel which has six rubber cushions arranged in steel frames around the hub. Through these cushions all shock is transmitted and the load "floated." The frames are covered with a steel plate that is riveted to the felloe band, and this band is made to S. A. E. dimensions to permit the use of



JANSON FUEL-FLOATING WHEEL.

any standard make of solid rubber tires on the outside. These wheels are said to give greater speed and mileage with less fuel, fewer repairs, and decreased tendency to skid. (Janson Steel Products Co., Detroit, Michigan.)

Activities of The Rubber Association of America, Inc.

WAR SERVICES OF RUBBER ASSOCIATION RECOGNIZED BY WAR TRADE BOARD.

THE WAR TRADE BOARD adopted the following resolution of thanks to The Rubber Association of America for valuable services rendered during the war:

RESOLVED, That the War Trade Board hereby extend their thanks to the Rubber Association of America, and to its officers, members and employees, for the valuable services which they have rendered to the War Trade Board during the war; and the War Trade Board do hereby further express their full appreciation of the able, efficient and conscientious manner in which said organization, its officers, members and employees, have cooperated with the Bureau of Imports in the administration of the Import Regulations of the War Trade Board.

FURTHER RESOLVED, That the secretary of the Board is hereby instructed to transmit a copy of these resolutions to The Rubber Association of America.

ADDITIONAL RUBBER MANUFACTURERS AGREE TO THE CRUDE RUBBER CHARGE.

Supplementing the list published in our last issue, the following manufacturers have since signed the agreement to pay the Rubber Association three cents per 100 pounds on all crude rubber purchased by them.

Advance Rubber Co., Inc. Oak Rubber Co., Inc.
Gaughey Rubber Co., Inc. Owen Tire & Rubber Co.
Lion Tire & Rubber Corp., The. Porter Rubber Co., The.
Western Reserve Rubber Co., The.

FIRM AND ASSOCIATE MEMBERS ELECTED.

At the meeting of the Executive Committee, held February 21, 1919, the following members were elected:

FIRM MEMBERS AND REPRESENTATIVES.

L. H. Bussard & Co., Inc., V. G. Thomas, 100 William street, New York City.
The Bussard & Huestcher Chemical Co., Philip Schlensner, 100 William street, New York City.
Eureka Rubber Manufacturing Co., H. Yellin, 4th avenue and 8th street, Callee Point, New York.
Briggs & Co., Inc., I. W. Brander, 30 East 4th street, New York City.
Zee Zee Rubber Co., C. Francis Fisk, Yardsville, New Jersey.
Pacific Trading Corporation of America, C. C. Halling, 90 West street, New York City.
Hampstead Foundry, Agency, Inc., H. P. Farrington, 31 Nassau street, New York City.
W. H. Harnsmead & Co., W. Harnsmead, 68 Broad street, New York City.
Overman Cushman Tire Co., Inc., M. C. Overman, 250 West 34th street, New York City.
Oak Tire & Rubber Co., Limited, F. Low, Toronto, Ontario, Canada.
Wilson Tire & Rubber Co., James W. McElvain, Springfield, Illinois.
The F. E. Partridge Rubber Co., Limited, F. E. Partridge, Guelph, Ontario, Canada.
Ideal Tire & Rubber Co., I. R. Davies, Cleveland, Ohio.
Vulcan Rubber Co., Mr. Liebel, Erie, Pennsylvania.
Surety Tire & Rubber Co., William L. Burgess, St. Louis, Missouri.
Continental Rubber & Leather Co., H. V. Hardman, Bellville, New Jersey.
The Grant Tire & Rubber Co., C. E. Hart, Findlay, Ohio.
McCreary Tire & Rubber Co., Harry McCreary, Indiana, Pennsylvania.

ASSOCIATE MEMBERS.

J. E. Bright, Racine Auto Tire Co., Racine, Wisconsin.
Charles R. Haynes, United States Rubber Co., Naugatuck, Connecticut.
The following members were elected on March 20:

FIRM MEMBERS AND REPRESENTATIVES.

T. H. Adams Co., H. J. Adams, Akron, Ohio.
Advance Rubber Co., Louis Kaplan, Brooklyn, New York.
The Akron Equipment Co., C. R. Quinn, Akron, Ohio.
Buffalo Foundry & Machine Co., E. G. Rimpel, Buffalo, New York.
The Double Fabric Tire Co., W. H. Willenans, Auburn, Indiana.
The Electric Rubber Reclaiming Co., Joe S. Benner, Barborton, Ohio.
The Gregory Rubber Co., T. M. Gregory, Ft. Akron, Ohio.
The Kuhlke Machine Co., M. D. Kuhlke, Akron, Ohio.
The Lincoln Rubber Co., John Hadfield, Akron, Ohio.
The Len Meyer Co., L. Meyer, Akron, Ohio.
The Oak Rubber Co., Paul E. Collette, Ravenna, Ohio.
N. W. Obalski & Co., Inc., N. W. Obalski, New York.
The Owen Tire & Rubber Co., N. Owen, Bedford, Ohio.
The Porter Rubber Co., Grant Hill, Salem, Ohio.
The Schacht Rubber Manufacturing Co., William Schacht, Huntington, Indiana.

Sweeney & Co., Inc., Edward C. Sweeney, Jr., New York.
The Western Reserve Rubber Co., A. F. Whetlens, Akron, Ohio.
The Williams Foundry & Machine Co., F. E. Holcombe, Akron, Ohio.

ASSOCIATE MEMBERS.

W. H. Dickerson, Meyer & Brown, New York City.
States Rubber Co., New York City.

SPECIAL COMMITTEE INVESTIGATING FEDERAL EXCISE TAXES.

At a joint meeting of the Executive Committees of the Pneumatic and Solid-Tire Divisions held in New York City, the following committee was appointed to investigate fully the provisions of the new federal excise tax on tires, tubes, parts and accessories:

Charles Neave, chairman, counsel of The Rubber Association of America; J. C. Weston, United States Tire Co.; Kennedy M. Thompson, United States Rubber Co.; Bernard M. Robinson, Firestone Tire & Rubber Co.; F. C. Van Cleef, The B. F. Goodrich Co.; C. L. Landon, The Goodyear Tire & Rubber Co., and W. B. Stratton, The Fisk Rubber Co.

ASSOCIATION NOTES.

The Outing Committee is working on the plans for the mid-summer outing that will be held June 17, 1919. Details of the program and place of meeting will be published later.

Louis V. Keeler has returned from the West after a successful business trip in the interests of the Association.

The Government has thousands of motion-picture reels and photographs taken during the war, covering every achievement that led to victory. By means of a projection machine they may be brought to every rubber mill and shown free to the people. Apply to the Bureau of Education, Washington, D. C., for particulars.

Eighty-five per cent of the firm members have signified their willingness to support the plan, published in our last issue, for collecting statistics of the rubber industry.

The Traffic Division has sent out an important circular of the United States Railroad Administration relating to the change in the export and domestic seaboard terminal control of permits which has superseded the former North Atlantic ports traffic committee.

A new circular has been issued by the Great Lakes Transit Corp., respecting the opening of navigation and the establishment of rates by this company.

CENTRAL AND SOUTH AMERICAN RUBBER STILL UNDER LICENSE.

The general import license, known as PBF No. 36, effective April 7, 1919, and covering the importation of many commodities into the United States from Mexico, Cuba, Haiti, Santo Domingo, and all countries of Central and South America, except British and French possessions, does not include rubber. As heretofore, rubber from these countries will be licensed freely for import when the applications therefor are otherwise in order.

Importations from British and French possessions in Central and South America are covered by General Import License PBF No. 34.

AMENDMENTS TO FREE LIST.

The War Trade Board announces, effective April 22, 1919, the following amendments of the revised free list (W. T. B. 648, March 15, 1919,) for Denmark, Norway, Sweden, European Holland, Switzerland, Finland, Luxemburg, and the occupied Rhine territory: The item beginning "Fancy goods of paper, ivory, mother-of-pearl," etc., has been amended to include xylonite, ebonite and vulcanite.

TWENTY-FIRST ANNIVERSARY BANQUET, RUBBER SUNDRIES MANUFACTURERS' DIVISION.

THE twenty-first annual banquet of the Rubber Sundries Manufacturers' Division of The Rubber Association of America, was held at the Hotel on the evening of April 23, 1919. The banquet hall was elaborately decorated with flowers and exotic plants in artistic profusion. A sunken garden and pool with live fishes and aquatic plants occupied the table center. Popular melodies were sung by colored jubilee singers while the menu was served. The guests of honor were H. E. Raymond and Henry C. Corson, and the toastmaster, C. J. Davol, who introduced the various speakers with fitting remarks. A silent standing toast was drunk to George F. Hodgman, H. C. Burton, Joseph Davol, and other deceased members.

Edward E. Huber gave an interesting history of the Rubber Manufacturers Association's activities from the first meeting, held September 9, 1898, at the Fifth Avenue Hotel, New York City, until its merger with The

Rubber Association of America. A vote of thanks was given to Mr. Huber at the conclusion of his address.

Henry C. Corson spoke of the days when the rubber industry was young, recalling older meetings, in a delightfully reminiscent manner. Since retiring from the rubber business "to make room for the younger generation," he has found that the philosopher's stone for keeping young is to be interested in helping others.

H. E. Raymond was eloquent, as always, and said that he was one of the younger generation alluded to by the previous speaker, and next year he would retire, like Mr. Corson, to make room for the younger generation.

The other speakers included George B. Hodgman, F. H. Jones, W. H. Balch, W. S. Davison, and H. A. Bauman.

Letters of regret were read from Homer E. Sawyer, president of the Rubber Association of America, and Henry C. Pearson, editor of THE INDIA RUBBER WORLD.

Thus closed one of the most interesting and enjoyable meetings known to members of the Rubber Sundries Division. A list of those present follows.



E. E. HUBER.



H. C. CORSON.



TWENTY-FIRST ANNIVERSARY BANQUET OF THE RUBBER SUNDRIES TRADE

C. J. Davol, Davol Rubber Co.
Henry C. Corson, honorary member Sundries Division.
H. E. Raymond, The B. F. Goodrich Co.
George B. Hodgman, Hodgman Rubber Co.
F. H. Jones, Tyer Rubber Co.
J. Russell Parker, Parker, Stearns & Co.
T. W. Miller, Faultless Rubber Co.
W. H. Balch, Faultless Rubber Co.
I. W. Miller, Faultless Rubber Co.
C. E. Campbell, Faultless Rubber Co.
H. A. Bauman, The B. F. Goodrich Co.
P. R. Westley, Davol Rubber Co.
S. T. Hodgman, Hodgman Rubber Co.

W. G. Brewer, Hodgman Rubber Co.
J. W. Kuhne, Hodgman Rubber Co.
Eberhard Faber, Eberhard Faber Rubber Co.
E. Lothar Faber, Eberhard Faber Rubber Co.
Lothar W. Faber, Eberhard Faber Rubber Co.
Edward E. Huber, Eberhard Faber Rubber Co.
W. S. Davison, The Miller Rubber Co.
Lloyd P. Jones, Canton Rubber Co.
S. H. Jones, United States Rubber Co.
W. L. Pitcher, Easthampton Rubber Thread Co.
H. H. Reddy, Whitall-Tatum Co.
Frank L. Williams, Tyer Rubber Co.
W. Dudley Yates, Tyer Rubber Co.

HARRY S. VORHIS, The Rubber Association of America.

Interesting Letters From Our Readers.

PLANS SUBMITTED TO THE GOVERNMENT.

TO THE EDITOR OF THE INDIA RUBBER WORLD:

DEAR SIR—Now that the war is over, I want to say a bit about what I have tried to do to help. You know, of course, of my boy who went "Over There" and did his bit. As I was beyond the draft age I tried to use my rubber knowledge for my country. I am, therefore, sending two plans that I submitted. I do not know whether or not they were useful, but anyhow, Uncle Sam knows I tried.

PROTECTION OF THE GASOLINE TANK ON BATTLEPLANES.

This device provides for the protection of gasoline tanks by using rubber sheets that will vulcanize to varying degrees of hardness, thus forming a body of rubber which, when applied to the tank, will prevent the rapid loss of gasoline if the tank is punctured. This quality is due to the fact that rubber as described is not only hard to penetrate, but when penetrated by a bullet a very small hole is left and by the use of rubber of varying degrees of hardness and density the hole will close up and prevent the escape of the gasoline in the tank.

I have also provided additional protection against inflammable bullets by the use of asbestos wool or fiber, which is placed outside of the rubber protection, as it seems reasonable that the action of the asbestos on the bullet will be to nullify its action to a very great extent. The rubber will also assist in this action.

It is also my purpose to have the rubber protector vulcanized in such a manner that it will be compressed when it is applied to the tank, as this will assist in the desired action.

PROTECTION OF VESSELS AGAINST DAMAGE BY SHELLS AND TORPEDOES.

If a sheet of rubber of suitable thickness and density was placed between the plates of a vessel at the proper distance above and below the water line, and, if necessary, running all around the hull, it would prevent the shattering of the plates when struck by a shell or torpedo and so prevent the loss of the vessel. It is a well-known fact that rubber will not shatter from the force of explosives, as does iron or steel, and it is this fact that will prevent the loss of the ship when hit by shells or torpedoes.

In the application of this plan rubber sheets of a suitable thickness provided with holes for rivets are placed on the hull of the vessel. Then over the rubber is placed a suitable thickness of steel plates which are then riveted through the holes to the hull. This method of protection can also be applied to any vessel already built. Another method of applying the rubber would be to have the rubber sheets molded with a series of cells, the thickness of these cells being about three inches. They can be applied to the vessel in the same manner as first described. These cells would have a tendency to absorb the shock of a shell or torpedo especially, as it is a fact that air is a very great absorber of shocks. These cells would be filled with air at atmospheric pressure, but when struck by a shell or torpedo would be compressed at the point of contact and absorb the shock.

Sincerely,

WILMER DUNBAR.

Greensburg, Pa.

THE FIRST TUBING MACHINE.

TO THE EDITOR OF THE INDIA RUBBER WORLD:

DEAR SIR—This is the story of the first tubing machine: One day in August, 1876, a man walked into the office of the late C. B. Dickinson, at the Brooklyn Rubber Works, 349 Adams street, Brooklyn, New York, and asked for a place. He said he had worked for the National Rubber Co., Bristol, Rhode Island. He was hired and after working some weeks he told my father, Andrew E. Cabona, who was superintendent, that he had an idea for a machine that would revolutionize the rubber business. After some talk he disclosed the idea of a tubing machine. Everyone laughed and thought he was crazy, but he kept at it so long that my father looked into the matter and got him to make a rough drawing of the machine. After some hard work the drawing was made and was shown to Mr. Dickinson, who said the man was crazy. Thus the matter was dropped. One day a man by the name of Lafin, who had a place of business on Ann street, New York, and who did work for the firm,

dropped in and was shown the drawings, and was asked his opinion. He examined them very carefully and said that the idea was practical. He was told to go ahead. The result was the first tubing machine in the United States. It was a very crude machine, geared like a mill, so that it was thrown on a shaft by a clutch. The driving wheel weighed about 1½ tons and went very slowly. Six lengths of tubing were run at one time and a solid 3½-inch cord could be driven out. Now, coming down to the machine shown in THE INDIA RUBBER WORLD January 1, 1919, on page 191, some time after it was running, the late Francis H. Holton, who had been a partner of Mr. Dickinson, and was in business at the foot of Adams street, Brooklyn, secured a set of drawings of the machine and changed it so that only a slight, frail machine was made, run by a belt, as all such machines are today. I recognized it as soon as I saw the picture in your paper. I don't know where the late William Kiel heard of the machine, but I know this, that he never invented the tubing machine. The man who invented the machine was John Prior, the man to whom C. B. Dickinson gave a job. The man who gave the idea never derived a cent from his invention; what he got was a job which he afterward lost through his own fault. A good many men in the rubber business think the idea of the machine was taken from a macaroni press. It was not; it was developed from the machine that makes lead pipe.

Yours truly,

Brooklyn, New York.

E. A. CABONA.

JUDICIAL DECISIONS.

ROSSBACK, ET AL. VS. THE MANSFIELD TIRE & RUBBER CO.—Court of Appeals of New York, November 19, 1918.

The Mansfield Tire & Rubber Co. contracted for the purchase of two lots of rubber, on one of which two tons were delivered and paid for, when the balance of the shipments were deferred at the purchaser's request. No deliveries were made on the second contract, as these shipments were also deferred. Rossback claims that the Mansfield people repudiated the contracts, to which the latter answered that the shipments were deferred by agreement and when they were later demanded, they were refused. The Appellate Division of the Supreme Court decided for the Mansfield people and the Court of Appeals affirmed that decision. (Northeastern Reporter, Volume 121, page 888.)

CUSTOMS APPRAISER'S DECISIONS.

Protest 926,439.—On April 4, 1917, F. W. Myers & Co., acting as agents for the Maxwell Motor Co., made an entry of 250 sets of automobile tires and tubes imported at Port Huron, Michigan. The summary attached to the invoice was O.K'd, as to value, by the appraiser and forwarded to the collector. Four days later the appraiser requested the return of the papers and changed the original summary, which had been permanently attached to the papers, for one prepared by the deputy collector, upon which a notation was made saying that the invoice was incorrect without intent to defraud, and reappraising the value, increasing it 10 per cent. This was forwarded to the collector on June 21. The protests on reappraisal and re-reappraisal did not nullify the illegality of the appraiser's changes. The protest was sustained and the duties were payable only on the amount of the original appraisement. (Treasury Decisions, Volume 36, No. 11.)

Protest 851,767, of Pitt & Scott (New York). RUBBER WASHERS.—Rubber Washers used in fitting gage-glasses to steam boilers, classified as manufactures of hard rubber dutiable under

paragraph 369, Tariff Act of 1913, at 25 per cent. ad valorem were held dutiable at 10 per cent. as manufactures of india rubber or gutta percha under paragraph 368, possessing flexibility, resiliency and capable of withstanding great heat. (Treasury Decisions, Volume 36, No. 11.)

Protests 930,688 and 931,161, of William F. Mullen, New York City. GUTTA PERCHA—INDIA RUBBER.—Gums invoiced as gutta hangkang, gutta katiau, gutta doerian, gutta teweh, and gutta siak, classified at 10 per cent. ad valorem under paragraph 385. Tariff Act of 1913, were held free of duty as gutta percha or india rubber under paragraphs 502 and 513. A protest claiming free entry under various paragraphs, but omitting 502, was held sufficient. (Treasury Decisions, Volume 36, No. 14.)

Protest 930,116, of Thomsen & Co., New York City. BASEBALLS, TENNIS BALLS, TOYS.—Baseballs and tennis balls classified as toys at 35 per cent ad valorem, under paragraph 342, are claimed dutiable as manufactures of india rubber at 10 per cent., under paragraph 368, as manufactures of grass straw and weeds at 25 per cent., under paragraph 266, or as manufactures of cotton at 30 per cent. They were found to be of chief value of cotton, used by adults as well as children, and so held dutiable under paragraph 266. (Treasury Decisions, Volume 36, No. 10.)

DECISIONS OF COMMISSIONER OF PATENTS.

EX PARTE AMERICAN RUBBER CO. Decided November 20, 1918. Trade-Marks—"Sealhyde," for carriage cloth—descriptive.

The word "Sealhyde" as applied to a carriage-cloth which is an imitation leather formed of textile treated with waterproof material, held descriptive, and therefore not registrable.

EX PARTE UNITED STATES RUBBER CO. Decided December 9, 1918. Trade-Marks—Government insignia.

The prohibition against the registering of a mark comprising government insignia is not avoided because the letters happen to be part of the initials of the name of the applicant, and a mark consisting of the letters "U S" written on a disk with other relatively insignificant marking, is not registrable.

FEDERAL TRADE COMMISSION DECISION.

FEDERAL TRADE COMMISSION vs. E. P. JONES, S. A. PAUL, IRON-CLAD TIRE CO., INC., QUEEN RUBBER CO., INC., OVERROAD TIRE CO., INC., WORTH-MORE TIRE CO., INC.

The Federal Trade Commission found in its investigation of the affairs of the above corporations that E. P. Jones owns the majority of the stock and has the controlling interest in all of them. S. A. Paul, the other personal defendant, has sold his entire interest and is no longer connected with them. They are all New York corporations and deal in rebuilt and reconstructed automobile tires which are purchased in states other than New York and so are engaged in interstate commerce.

The tires sold by the respondents are rebuilt and reconstructed from partially used and discarded tires and are constructed substantially as follows: the fabric used to a great extent is known as Egyptian or Sea Island, taken only from carefully selected, partially worn, standard make tires. This fabric is carefully examined, repaired, buffed, and cleaned, and is given several coats of high quality vulcanizing cement. To reinforce and strengthen the tire a reliner is then added. The cushion and tread stock consisting of pure rubber, reclaimed rubber, and chemicals in proper proportion are then added, and the tires cured in steam vulcanizers.

The tires thus remade were originally of various makes and brands, the marks of which were effaced and others substituted. The new names have a tendency to mislead the purchaser into believing them to be manufactured from new and unused materials. These tires were advertised so as to guarantee a service of 4,000 miles and that if they failed they would be replaced at one-half the price paid, thus giving the impression that they would last 4,000 miles.

The Commission found that they were violating the Act of Congress of September 26, 1914, giving power to the Federal Trade Commission to regulate unfair competition in interstate commerce. It therefore ordered the respondents to cease circulating advertisements which would tend to create the belief among the consumers that the tires offered for sale are made of new and unused materials, and that the respondents must plainly mark them to show that they are remanufactured tires. (Federal Trade Commission, Docket 243, March 26, 1919.)

PATENTS AND TRADE-MARKS IN THE CZECHO-SLOVAK REPUBLIC.

A law for the protection of patents and trade-marks in the Czecho-Slav State was passed in Prague under date of October 28, 1918. By virtue of this law all patents and trade-marks registered in the Austrian Empire will apply to the Czecho-Slovak State, but it will be necessary at a later date to proceed and file certified copies of such patents and trade-marks at Prague.

At first the former Austrian laws concerning commercial invention rights (patents, trade-marks, and designs) will remain virtually unchanged. A complete revision of the trade-mark law is being planned and will be effected at a later date. This revision will satisfy all modern demands.

The Czecho-Slovak patent office will attend to the official control of the registration of trade-marks and granting of patents and of all matters relating thereto. It will be patterned along the lines of the Vienna patent office and will have departments for applications, complaints, nullifications, etc. As the Czecho-Slovak patent office is taking a great many experienced jurists and technical men from the former Imperial patent office at Vienna, it will be in working order from the very beginning.

There will be maintained, together with the patent office, a Czecho-Slovak patent court which will take charge of appeals from the nullification department.

The transition decisions will be of special interest and will be substantially as follows:

Patents granted in the past by the Vienna patent office as well as those granted in the future thereby, will not be in force in the Czecho-Slovak State.

If a Vienna patent is to be made valid in the Czecho-Slovak State, it must be applied for separately at the Czecho-Slovak patent office. The application must be accompanied with a certified copy of the Austrian patent and the application will then be regarded as issued by the Czecho-Slovak office. The current and following yearly taxes will have to be paid at the Prague office.

Austrian patent applications not yet acted upon by the Vienna office or still pending therein, will probably require a special registration in Prague, the priority date of filing in Austria being granted.

ANNUAL REPORT OF THE KELLY-SPRINGFIELD TIRE CO.

The annual report of the Kelly-Springfield Tire Co., Jersey City, New Jersey, shows that notwithstanding the difficulty of procuring raw materials, labor and transportation, and the curtailed output by governmental regulation, business largely increased during 1918. The net earnings, amounting to \$4,365,227.14, were the greatest in the history of the company, but are subject to heavy income and excess profits taxes. The balance sheet of December 31, 1918, shows a general surplus of \$9,197,858.19.

The outlook for the present year is excellent, the capacity of the various plants is taxed to the limit, and steps are being taken to provide means for increased production.

The Carolina Tire & Accessory Co., Columbia, South Carolina, has increased its capital from \$15,000 to \$50,000, of which \$25,000 is paid in. The company deals in wholesale automotive and shop equipment and no longer handles tires.

NEW TRADE PUBLICATIONS.

THE HANDLING OF COAL AND ASHES IN LUMBER MANUFACTURING plants, as well as heavy materials such as cement, sand, ore, etc., is the subject of Book No. 220, published by the Link-Belt Co., Chicago, Illinois, which is devoted to description and illustrations of the Peck carrier in its various modifications for the individual needs of such manufacturing establishments. The book, of nearly 100 pages, shows many diagrams and photographs, and gives the names of plants in which the carrier is installed, among which are several rubber companies and other concerns in allied trades.

THE RAYBESTOS CO., BRIDGEPORT, CONNECTICUT, HAS ISSUED an 80-page booklet descriptive of Raybestos brake linings and clutch facings, and giving in tabular form the brake and clutch data necessary for supplying the passenger and commercial cars on the American market with these products.

THE EDITOR'S BOOK TABLE

WHAT BRAZIL BUYS AND SELLS. MINISTRY OF AGRICULTURE, Industry, and Commerce, Rio de Janeiro, Brazil. (Paper, large quarto, 134 pages.)

THAT Brazil is eager to foster the growing trade relations with the United States, which have become an important outgrowth of the war, is evinced by this unusual publication in the English language, which has recently been issued for free distribution. Its purpose is to place before American commercial and financial interests the salient facts regarding the foreign trade of Brazil before and since the beginning of the great war.

Statistics of several sorts are given, but especially to indicate the things which Brazil requires for its development, particularly commodities formerly imported from Germany.

A study of the statistics presented discloses the interesting fact that although total exports from Brazil to the United States showed an increase of \$33,845,000 between the years 1913 and 1917; total imports from the United States to Brazil showed an increase of \$57,677,000; and imports of manufactured rubber goods from the United States to Brazil increased to the value of \$932,000, the exports of crude rubber from Brazil to the United States decreased \$452,000 in value, although the quantity was 4,709 metric tons greater in 1917 than in 1913.

HANDBOOK OF CHEMISTRY AND PHYSICS. A READY-REFERENCE Pocket Book of Chemical and Physical Data. Seventh Edition. By Charles D. Hodgman, B. S., assisted by Melville F. Coolbaugh, M. A., and Cornelius E. Sasseman, M. A. The Chemical Rubber Co., Cleveland, Ohio, 1919. (Leather covers, 4½ by 6¼ inches, 554 pages. Price \$2.50.)

The present edition of this convenient and valuable compilation of data contains about 100 pages more material than the previous edition, largely by the introduction of an entirely new and enlarged table of the physical constants of organic compounds. The list embraces about 2,000 compounds, including many which have only recently become of importance. The data given are classified under the following general topics: Mathematical Tables; General Chemical Tables; Properties of Matter; Heat; Hygrometric and Barometric Tables; Sound; Electricity and Magnetism; Light, Miscellaneous Tables; Definitions and Formulae; Laboratory Receipts; Photographic Formulae; Measures and Units; Wire Tables; Apparatus Lists; Problems.

The whole comprises a very valuable reference work for the laboratory.

STANDARD COTTON MILL PRACTICE AND EQUIPMENT. 1919. The National Association of Cotton Manufacturers, Boston, Massachusetts. (Cloth covers, 366 pages.)

This "Cotton Mill Year Book" contains a wealth of information for manufacturers of cotton textiles and the rubber trade in general. Following an introductory article by Arthur Richmond Marsh, editor of "The Economic World," reviewing the American cotton trade during the year 1918, and devoting some

space to the conditions and prospects of the present year, there are nearly sixty pages of statistics regarding raw cotton production, consumption, export, import and prices; mill production statistics, including tables for numbering yarn by weight, breaking weight tables, yarn and cloth output tables, and many others. A classified buyers' index of equipment and supplies lists the latest machinery and equipment for the manufacture of cotton textiles of every sort.

THE OBITUARY RECORD.

A PIONEER IN HARD RUBBER MANUFACTURE

MYER DITTENHOEFER, one of the pioneers of the hard rubber industry in America and for many years president of the Vulcanized Rubber Co., Morrisville, Pennsylvania, died in his



MYER DITTENHOEFER

apartment at the San Remo Hotel, New York, April 2, 1919, after an illness of only a week. He was born in New York City over 80 years ago, the son of Isaac and Barbetta D. Dittenhoefer. In the early days of the Civil War he was United States Consul at Mannheim, Germany, in which city he started a hard rubber factory in 1860. On his return from Germany he brought with him William Keil, who was for

many years connected with the American Hard Rubber Co. In the 'sixties, with S. S. Sonneborn as partner, he formed the New York Rubber Comb Co., with a factory in Orange, New Jersey, and subsequently became one of the leading spirits in the Keystone company, manufacturing similar goods. Later he organized the Goodyear Vulcanite Co., with a plant at Morrisville, of which he was at first manager, and later president. This company manufactured a general line of hard-rubber goods, but mainly combs and patented electrical appliances. In 1901 Mr. Dittenhoefer transferred all of his hard-rubber interests to the newly formed Vulcanized Rubber Co., of which he was president, and the late T. E. Studley, treasurer. The factory at Morrisville, built nearly a hundred years previous, even with several additions, proved too small to accommodate the business. A new and modern plant was begun in 1902, and finished in 1904.

The ceremony of laying the corner-stone was notable through the attendance of men prominent in the trade from all parts of the country. Incidentally, it is interesting to recall that, at Mr. Dittenhoefer's request, among the documents sealed up for all time beneath the corner-stone was a copy of THE INDIA RUBBER WORLD.

Mr. Dittenhoefer held the presidency of the company until 1913, retiring then from that office, though he was made chairman of the board of directors, which office he held at the time of his death.

His wife died two years ago, a short time after the couple celebrated their golden wedding. He is survived by a son, Lester F. Dittenhoefer, and three married daughters. The funeral, which was held Friday, April 4, was attended by many connected with the rubber trade, as well as by members of the Masonic fraternity, in which he was prominent.

Annual Report of the United States Rubber Co.

THE twenty-seventh annual report of the United States Rubber Co., presented at the annual meeting April 15, 1919, showed a highly satisfactory year's business, the net sales amounting to \$215,398,425.04, an increase of more than \$39,000,000 over the sales of 1917. The net profits for the year, before deducting income charges, inventory adjustments, and provisions for Federal, Canadian, and British taxes, amounted to \$39,480,631.83. The deduction of the above-named items, \$19,289,534.86, and the charging off of \$4,119,053.41 for interest, left a net profit of \$16,072,041.56 for the year. From this there remained to be deducted \$4,981,501.50 for dividends paid on United States Rubber Co. preferred stocks and to minority stockholders of subsidiary companies, leaving \$11,090,540.06 as the surplus for the year, to which is added the surplus at the beginning of the period, less deductions of \$1,133,695.66, leaving the net surplus on December 31, 1918, \$42,981,747.16.

The financial condition of the company is indicated by the accompanying balance sheet and provides the greater working capital required by constantly expanding business, high cost of materials, and contemplated extensions, particularly in the tire division.

THE CHAIRMAN'S REPORT.

To the Stockholders of the United States Rubber Co.:

Under the by-laws of the company as amended March 19, 1918, the chairman of the board of directors is charged with submitting an annual report to the stockholders. In compliance therewith, your chairman submits the following report for the fiscal year ended December 31, 1918.

The detailed financial statement, as compiled by the comptroller and certified by the public accountants, is appended hereto and made a part hereof. This statement gives a consolidated general balance sheet as of December 31, 1918, and a consolidated income statement for the year ended December 31, 1918, of the United States Rubber Co. and its subsidiaries, after excluding all offsetting accounts between the companies.

BY-LAWS OF THE COMPANY.

The by-laws of the company, as amended at the last stockholders' meeting, provided for the election of a chairman and a vice-chairman. At the December meeting of the board of directors, your former president was elected chairman, Mr. Lester Leland, vice-chairman, and Mr. Charles B. Seger, at the time president of the several companies comprising the Union Pacific Railway System, was elected president. Mr. Seger thereupon resigned as president of the Union Pacific companies, and has since been active in the performance of the duties of president of this company. Mr. Seger supplies a much needed addition to our official staff. He was not a stranger to our company, having been a director and member of our executive committee for nearly two years, and his election to the presidency has been received with universal approval and satisfaction by our entire organization.

VOLUME OF BUSINESS AND PROFITS.

The net sales of the company for the year 1918 were \$215,398,425.04, an increase of more than \$39,000,000 over the sales of the previous year. The income from sales, after deducting cost of manufacture, depreciation, property taxes, selling and general expenses, cash discounts allowed customers for prepayment, and adequate reserve for bad debts, amounted to \$39,480,631.83. From which there should be deducted income charges, net, including inventory adjustments and provisions for Federal, Canadian and British taxes 19,289,534.86

Thus leaving the net before interest.....\$20,191,096.97

Less interest, net	4,119,053.41
Net profits for the year.....	\$16,072,041.56
Dividends paid on United States Rubber Co. preferred stocks.....	\$4,961,992.00
Dividends paid to minority stockholders of subsidiary companies	19,509.50 4,981,501.50
Leaving as the surplus for the year.....	\$11,090,540.06

GENERAL RUBBER COMPANY DEBENTURES.

In refunding our indebtedness under our first and refunding mortgage, as set forth in the annual report presented March 20, 1917, all outstanding issues were provided for at that time in cash except \$9,000,000 of debentures of the General Rubber Co., which fell due December 1, 1918, and \$2,600,000 of bonds of the Canadian Consolidated Rubber Co., Limited, which will fall due in 1946, for refunding which an equivalent amount of first and refunding mortgage bonds was reserved.

Provision was this year to take up the debentures of the General Rubber Co., when they fell due, through an issue of \$6,000,000 of 7 per cent five-year gold notes of this company, secured by \$9,000,000 of our first and refunding mortgage bonds which were issuable for that purpose. The balance to take up these debentures was provided from our current resources.

GENERAL FINANCIAL CONDITION.

The financial condition of the company is strong, as indicated by the consolidated general balance sheet appended hereto. With the continually expanding business and present high prices of materials, more working capital is required, in addition to which extensions have been planned, especially in the tire division, which will consume a large amount of money.

DIVIDENDS UPON THE COMMON STOCK.

Although the past year's earnings considered by themselves would warrant a dividend upon the common stock, your directors felt that it would not be prudent to pay one on account of the uncertainties which existed in business, and the company's cash position.

INVENTORIES.

Inventories of manufactured goods and materials have been taken on a conservative basis, having in mind the decline in values as a consequence of the closing of the war.

MAINTENANCE.

The plants and properties have been maintained in the highest state of efficiency and adequate charges for depreciation have been made.

EXPORT BUSINESS.

The export sales of the company outside of war orders were maintained during the year, and with the close of the war your directors believe there is a greater opportunity offered in this field than ever before and preparations are being made to materially extend our export business.

OPERATING DIVISIONS.

The operating divisions of the company are now under the direct charge of the president. The president presides at the meetings of the operating council and reports their recommendations to the executive committee, of which body he is also a member. Greater directness and efficiency are thus obtained.

SUMATRA RUBBER PLANTATIONS.

The receipts of rubber from our plantations in Sumatra for 1918 showed a substantial increase over the previous year. We have taken steps for some extension of the planted area there, which, together with the increased age of the trees, should produce for us more and more rubber each year hereafter.

I would mention that there has been considerable damage by water to one of our smaller estates called the "Langkat."

On May 23, 1918, the permanent organization of the United States Rubber Plantations, Inc., referred to in the last annual report, was effected, and took over the management of our Sumatra plantations.

CONCLUSION.

The volume of business of our company so far this year has been somewhat in excess of the same period of last year, and though we look for a falling off in certain lines, especially those where war orders were large, now that we are on a peace basis, the present indications are that our volume for 1919 will be satisfactory.

It gives me pleasure to refer to the continued fidelity and ability shown by the officers, heads of departments, our Far Eastern and foreign staffs, and other employees of the company and its subsidiaries.

Respectfully submitted,

SAMUEL P. COLT, Chairman.

THE COMPTROLLER'S REPORT.

UNITED STATES RUBBER CO. AND SUBSIDIARY COMPANIES.

Consolidated General Balance Sheet, December 31, 1918.

ASSETS.		
Cash	\$12,350,286.76	
Accounts receivable	35,566,176.91	
Notes and loans receivable	1,627,472.60	
Manufactured goods and material	70,704,225.80	
Total current assets		\$120,228,162.07
Securities, including stock of United States Rubber Company held by subsidiary companies		\$6,494,432.81
Property, plants and investments, including rubber plantations	134,886,551.29	
Prepaid and deferred assets	1,282,303.75	
Total assets		\$262,891,449.92
LIABILITIES, RESERVES AND CAPITAL.		
Accounts payable and accrued liabilities	\$14,852,944.33	
Acceptances payable for importation of crude rubber	942,362.63	
Notes and loans payable	9,463,350.00	
Total current liabilities		\$25,258,657.21
United States Rubber Co. first and refunding mortgage 5 per cent gold bonds, due 1927		
Less treasury bonds deposited as security for United States Rubber Co. 5-year 7 per cent secured gold notes, due December 1, 1923	9,000,000.00	60,000,000.00
Canadian Consolidated Rubber Co. Limited 6 per cent gold bonds, due 1940		2,600,000.00
United States Rubber Co. 5-year 7 per cent gold notes, due December 1, 1923		6,000,000.00
Underlying bonds		385,000.00
Cash deposited to provide for	385,000.00	
Total liabilities		\$93,860,657.21
General reserves		6,678,221.85
Insurance fund reserve	1,565,618.85	
Employees' accident fund reserve	598,938.72	2,164,557.57
Reserve for depreciation of property and plants		11,680,388.57
Reserve for January dividend on preferred stock		1,290,455.00
Total reserves		22,063,665.99
Capital stock, first preferred		61,722,200.00
Capital stock, second preferred		403,600.00
Capital stock, common		36,000,000.00
Minority Canadian Consolidated Rubber Co., limited, stock		284,000.00
Total capital stock		98,409,800.00
Fixed surpluses—subsidiary companies	6,709,375.92	
Surplus	41,848,051.50	48,557,326.72
Total capital stock and surpluses		\$146,967,126.72
Total liabilities, reserves, and capital		\$262,891,449.92
Consolidated Income Statement.		
Total sales		\$18,398,425.04
Cost of manufacture, depreciation, selling and general expenses and property taxes		169,594,286.00
Operating profits		\$45,804,139.04
Cash discounts allowed customers for prepayment, net	5,443,460.64	
Deductions for bad debts	880,046.37	
Net income on sales		\$39,480,631.83

Income charges, net, including inventory adjustments and provision for federal, Canadian, and British taxes	19,289,534.86
Net income before interest	\$20,191,096.97
Interest, net	4,119,055.41
Net profits for the period	\$16,072,041.55
Dividends—United States Rubber Co.	
First preferred stock, 8 per cent	4,937,276.00
Second preferred stock, 6 per cent	24,216.00
Dividends to minority stockholders of subsidiary companies	19,509.50
Surplus for the period	\$11,090,540.06
Surplus beginning of period	31,891,207.10
Total	\$42,981,747.16
Deductions from surplus	1,133,695.66
Surplus December 31, 1918	\$41,848,051.50

Respectfully submitted,

W. G. PARSONS, Comptroller.

DIRECTORS.

At the recent annual meeting of the company the following officers were elected:

James S. Alexander, New York City.
Walter S. Ballou, Providence, Rhode Island.
James C. Brady, New York City.
Nicholas F. Brady, New York City.
Middleton S. Burrill, New York City.
Samuel P. Colt, Providence, Rhode Island.
Harry E. Converse, Boston, Massachusetts.
Sir Mortimer B. Davis, Montreal, Quebec.
James Deshler, New Brunswick, New Jersey.
James B. Ford, New York City.
James Newton Gunn, New York City.
Francis L. Hine, New York City.
Ernest Hopkinson, New York City.
Henry L. Hotchkiss, New Haven, Connecticut.
William S. Kies, New York City.
Lester Leland, Boston, Massachusetts.
Nathaniel Myers, New York City.
Samuel M. Nicholson, Providence, Rhode Island.
Raymond B. Price, New York City.
Homer E. Sawyer, New York City.
Charles B. Seger, New York City.
William H. Truesdale, Greenwich, Connecticut.
Theodore N. Vail, Boston, Massachusetts.
Elisha S. Williams, New York City.

EXECUTIVE COMMITTEE AND OFFICERS.

EXECUTIVE COMMITTEE.

Samuel P. Colt, Lester Leland, Charles B. Seger, James B. Ford, Walter S. Ballou, Nicholas F. Brady.

OFFICERS.

Except for the elevation of Messrs. Colt and Leland to the offices of chairman and vice-chairman, respectively, and the creation of a tire division under the direction of J. Newton Gunn, last year's officers were reelected as follows: Samuel P. Colt, chairman; Lester Leland, vice-chairman; Charles B. Seger, president; James B. Ford, vice-president; Homer E. Sawyer, vice-president in charge of footwear division; Elisha S. Williams, vice-president in charge of mechanical goods division; J. Newton Gunn, president of United States Tire Co., in charge of tire division; Ernest Hopkinson, vice-president; Samuel Norris, secretary; W. G. Parsons, vice-president and comptroller; H. B. Hubbard and William O. Cutter, assistant comptrollers; W. H. Blackwell, treasurer; John D. Carberry, assistant secretary and assistant treasurer.

OPERATING COUNCIL.

Charles B. Seger, chairman; Homer E. Sawyer, Elisha S. Williams, J. Newton Gunn, Ernest Hopkinson, Theodore Whitteley, and W. G. Parsons.

The Fort Wayne Tire and Rubber Manufacturing Co., Fort Wayne, Indiana, has increased its capital from \$500,000 to \$1,000,000.

FIRST ANNUAL REPORT OF THE REPUBLIC RUBBER CORPORATION.

THE first annual report of the Republic Rubber Corp., New York City, and its subsidiaries, The Republic Rubber Co., Youngstown, Ohio, and the Canton-Blackstone Co., Canton, Ohio, formerly the Knight Tire & Rubber Co., has been issued to stockholders. The condensed balance sheet below covers the year 1918, during which the company was forced to meet not only the unusual conditions prevalent in the industry, but also its own problems of reorganization and re-financing. Under the circumstances the directors regard the net results with satisfaction. All expenses occasioned by the reorganization and additional financing have been fully absorbed and the Federal taxes provided for. All assets of doubtful value have been entirely written off, and the additional working capital needed has been supplied by the sale of second preferred stock. The business of the company is rapidly becoming normal and the directors regard the outlook as excellent.

The condensed balance sheet at the close of business December 31, 1918, follows:

ASSETS.	
CURRENT.	
Cash on hand and in bank.....	\$493,884.96
U. S. Liberty Loan bonds.....	61,650.00
Unpaid stock subscriptions (paid in cash to February 15, 1919, and due April 1, 1919).....	1,500,000.00
Trade acceptances receivable.....	263,057.66
Notes receivable.....	32,278.74
Accounts receivable, after allowance for doubtful accounts, cash discounts, etc., in the amount of \$200,064.75.....	1,747,699.65
Inventory (after certain reserves).....	6,843,245.46
	10,941,236.47
OTHER ASSETS.	
Investment in associated companies.....	375,836.05
Deferred stock subscriptions, payable July 1 and October 1.....	512,780.00
Trade acceptances receivable past due.....	61,902.39
Notes and accounts receivable past due.....	84,743.31
Employed stock contracts, notes and accounts receivable.....	126,817.49
Miscellaneous investments.....	8,197.95
	1,170,277.19
PERMANENT.	
Property, plant, and equipment as appraised at reproduction value adjusted to December 31, 1918.....	5,486,902.27
Less: allowance for depreciation and obsolescence.....	4,606,973.28
Patents and patent rights.....	2.00
DEBITES.	
Expenses applicable to future operations.....	109,425.29
	\$16,827,914.23
LIABILITIES.	
CURRENT.	
Notes payable; borrowed money.....	\$5,304,750.00
Accounts payable; current purchases, payroll, commissions, etc.....	783,967.65
Accrued taxes and preferred dividends.....	173,634.36
Reserve for contingencies.....	37,092.51
Other liabilities.....	27,060.00
	\$6,269,452.01
SURPLUS.	
Capital stock.	
First preferred 7 per cent cumulative, authorized \$10,000,000, issued and held for exchange.....	\$6,767,400.00
Second preferred 8 per cent cumulative convertible, authorized \$2,500,000, subscribed.....	2,100,000.00
Common.	
No par value (authorized 650,000 shares) issued and to be issued 317,721 shares.....	1,634,009.71
Net worth.....	10,501,409.71
	\$16,827,914.23

OFFICERS.

The officers of the company are: Guy E. Norwood, president; L. T. Petersen, vice-president in charge of production; Harvey J. Woodard, vice-president in charge of sales; Mark W. Roe, vice-president in charge of plant; C. F. Garrison, secretary; M. I. Arms, 2nd, treasurer; Arthur L. Irish, assistant secretary; H. J. Stambaugh, assistant treasurer; John T. Harrington, general counsel. The directors are Guy E. Norwood, L. T. Petersen, M. I. Arms, John T. Harrington, Robert Bentley, C. H. Booth, W. M. Coleman, R. E. Cornelius, H. M. Gorlick, Richard Gorlick, R. C. Steese, John Tod.

STATEMENT AND BALANCE SHEET OF THE INTERCONTINENTAL RUBBER CO.

THE directors of the Intercontinental Rubber Co., 15 Exchange Place, Jersey City, New Jersey, have submitted to their stockholders the following balance sheet and statement of profits for the five months ending December 31, 1918, it having been voted by the stockholders at the last annual meeting to change the ending of the company's financial year from July 31 to December 31. The statements have been prepared and certified to by Messrs. Loomis, Suffern & Fernald, chartered public accountants, New York City.

CONDITIONS IN MEXICO.

During the period reflected in these accounts there was no material change in Mexican conditions, although the epidemic of influenza placed an additional handicap on all operations. Production of the Torreon factory was 1,284,503 pounds of rubber (20 per cent moisture basis).

STEAMSHIP INVESTMENTS.

On October 22, 1918, the remaining investment of the company in steamship securities was disposed of for cash, and a substantial portion of the profit earned during the period resulted from this transaction.

AMERICAN CONGO CO. IN AFRICA.

The suspension of hostilities in Europe has not materially affected the company's business. The activities of the American Congo Company in Africa have been reduced to a minimum since the beginning of the European war, and although a partial resumption is being arranged for, the directors do not feel that the outlook is particularly encouraging.

SUMATRA PLANTATIONS.

Development of the Sumatra plantations continues to be highly satisfactory. The demand for crude rubber has been good, although at somewhat reduced price levels.

INVESTMENT SECURITIES.

The item of investment securities shown on the balance sheet represents bonds, short term notes and Liberty Loan Bonds. It was necessary to deduct from income the sum of \$46,526.50 in order to adjust this account to the market quotations of December 31, 1918.

BY ORDER OF THE BOARD OF DIRECTORS.

April 7, 1919.

WILLARD P. SMITH, Secretary.

CONDENSED BALANCE SHEET—DECEMBER 31, 1918.

ASSETS.	
Investments in	
Merged and subsidiary companies:	
By cash.....	\$3,237,211.50
By stock issues.....	28,198,575.30
Patents (exclusive of subsidiary companies).....	15,141.27
Accounts and notes receivable, etc.....	\$313,885.54
Advance to subsidiary companies.....	\$3,000.75
Surplus accounts.....	348,890.26
Advances on rubber.....	158,452.12
Investment securities.....	1,928,123.54
Cash.....	257,978.88
	\$34,234,453.16
LIABILITIES.	
Capital stock: common.....	\$29,031,000.00
Accounts payable, taxes accrued, etc.....	317,21.68
Reserve accounts.....	54,413.24
Surplus (as below).....	4,417,297.77
	\$34,234,453.16
SURPLUS ACCOUNTS.	
Surplus July 31, 1918.....	\$4,169,624.56
Net profits and income from investments, etc.....	\$281,571.93
Administration, general expenses and taxes.....	33,898.72
	247,673.21
Surplus, December 31, 1918.....	\$4,417,297.77

NEW ARMSTRONG TIRE PLANT.

Arthur J. Peebles, Jr., of Rubber Co., Inc. recently completed a master's thesis at New Jersey, on the manufacture of super-tube cord and fabric tires and extra heavy tubes. The company has been in business three years, having begun with a small tube plant. The present production is 200 tires and tubes daily, and an increase to 800 daily is anticipated during the year. Arthur J. Peebles, former special representative for The Goodyear Tire & Rubber Co., Akron, Ohio, has recently become general manager. Mr. Peebles was one of the organizers, also former trade



DUNN and ARMSTRONG, RUBBER C.

secretary and treasurer, of the National Automobile Association, and has wide acquaintance throughout the tire trade.

NEW INCORPORATIONS

100 West 3rd street, New York City. The April 1st New York, 1909, of Stewart & T. Madenall, both of 100 West 3rd street, New York City. The manufacture into curtains, etc. \$100,000

G. J. Waters, E. C. Salmon, M. Morris—all of 111 Broadway, New York City. Delaware agent, United States Corporation Co., 311 South State street, Dover, Delaware. To lay, sell, and deal in automobile tires of every kind and description.

Armored Tube Sales Agency, Inc., of Delaware, April 10 (Delaware)
3. *State of Delaware v. Reinhardt, A. C. Taylor, R. H. Martin* et al. of Wilmington, Delaware agent, D. J. Reinhardt, Ford Building, Wilmington, Delaware. To buy, sell, and deal in automobiles and motor vehicles.

3. *Adams and Lube Sales Agency, Inc.*, of Maryland, April 10 (Delaware)
4. *Adams and Lube Sales Agency, Inc.*, of Maryland, April 10 (Delaware)
5. *Adams and Lube Sales Agency, Inc.*, of Maryland, April 10 (Delaware)

K. Lums, secretary, Salesman, 504 South Third street, Louisville, Kentucky. Telephone 1-1000. Principal office, 1013 Stacks Building, Louisville, Kentucky. Telephone 1-1000. Also has offices in Kentucky and southern Indiana.

Wincaton, R. M., Marsh, W. A., Bradford. To deal in tires, tubes, and inner linings of every kind, rubber goods and products.

[illegible]

Briggmann Tire & Rubber Co., Geo. F. Marsh & Co., New York, N. Y.
 000. E. L. and V. S. Bates—both of 51 Grove avenue, Metuchen, New
 Jersey; G. F. and M. S. Briggmann—both of 115 Eaton avenue, Meriden
 Connecticut. Principal office, 51 Grove avenue, Metuchen, New Jersey.

Agent in charge, V. S. Bates. To manufacture, buy, sell, and deal in all goods of which rubber is a component part.

Plant located at Plainfield, New Jersey. Principal office, 702 Parkman street, Plainfield, New Jersey. Agent in charge, L. P. Clark. The manufacturer of automobile tubes and all other kinds of rubber automobile accessories, and

164 Rosewood Terrace; A. A. and G. I. Batzold, both of 44 Holmdel Place—
—d. 1 Rosewood, New York. To deal in tires.

H. Dubois, Bradish avenue, Bayside, Long Island; F. M. Dayton, 28 West 12th street, New York; H. Tresselt, 2122 La Fontaine avenue, Bronx, New York. To manufacture druggists' sundries, rubber goods

Eastman Rubber Works, Inc., April 19 (New York), \$200,000. C. L. Eastman, both of 213 West 40th street; D. D. Deutsch, 1789 Broadway, New York City. To conduct a rubber and tire business.

Springs Road, Red Bank; J. J. and M. B. Kath, both of Springfield, New Jersey. Principal office, 172 Monmouth street, Atlantic City, N. J.

News of the American Rubber Industry.

DIVIDENDS.

THE AMERICAN CHICLE CO., New York City, manufacturer of chewing gum, has declared a quarterly dividend of one per cent, payable May 1 on common stock of record April 19, 1919.

The American Winger Co., Woonsocket, Rhode Island, manufacturer of all kinds of wringers, declared its regular quarterly dividend of one and three-quarters per cent, payable April 15 on preferred stock of record March 31.

The Firestone Tire & Rubber Co., Akron, Ohio, manufacturer of tires, rubber footwear, and other rubber goods, declared a quarterly dividend of one and one-half per cent, payable April 15 on common stock of record April 1, 1919.

The Hood Rubber Co., Watertown, Massachusetts, manufacturer of rubber tires and footwear, has declared its regular quarterly dividend of one and three-quarters per cent, payable May 1 to preferred stock of record April 22, 1919.

The Kelly-Springfield Tire Co., New York City, tire manufacturer, has declared quarterly dividends of \$1 cash per share and three per cent in common stock, on its common stock, payable May 1 on stock of record April 15, 1919.

The McGraw Tire & Rubber Co., East Palestine and 1900 Euclid avenue, Cleveland, Ohio, tire manufacturer, declared its quarterly dividend of one and three-quarters per cent on preferred stock, payable April 1 on stock of record March 20, 1919.

The Manufactured Rubber Co., Philadelphia, Pennsylvania, manufacturer of rubber substitute, which resumed paying dividends on its preferred stock last January, recently declared another of one and one-half per cent, payable April 25 on stock of record April 19, 1919.

The Portage Rubber Co., Akron, Ohio, has declared a quarterly dividend of three per cent, payable May 15 on common stock of record May 5, 1919, also a quarterly dividend of one and three-quarters per cent on its preferred stock.

The Sioux City Tire & Manufacturing Co., Sioux City, Iowa, tire manufacturer, has declared cash dividends of eight per cent on preferred stock, payable May 15, and of thirty per cent on common stock, payable July 15, 1919.

The United States Rubber Co., New York City, manufacturer of tires and all kinds of rubber goods, declared quarterly dividends of two per cent and one and one-half per cent, respectively, on its first and second preferred stock, both payable April 30 on stock of record April 15, 1919.

The Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pennsylvania, manufacturer of automotive equipment, has declared a quarterly dividend of one and three-quarters per cent (\$0.87½ per share), payable April 30 on common stock of record April 4, 1919.

LABOR CONDITIONS IN NEW YORK.

Assuming that labor conditions in the rubber and gutta percha factories of the State of New York are fairly indicative of similar conditions throughout the country, the most recent statistics for February, 1919, published by the New York State Industrial Commission are of interest.

These statistics show an increase over the preceding month of 2.6 per cent in the number of workers employed and a decrease of 3.7 per cent in total wages, the latter being due to a reduction in the hours worked per week. As compared with the same month of 1918, there are 4.1 per cent less workers employed, but their total wages represent an increase of 17.7 per cent. Average weekly earnings of all employees in both office and factory are now \$18.61, and have undergone a gradual increase from \$10.66 in 1915. Herein lies the chief cause for the increased cost of manufactured rubber goods.

RUBBER COMPANY EMPLOYEES FORM AN ATHLETIC LEAGUE.

In order to become better acquainted, employees of the different rubber companies in and about New York have formed an athletic association and will give a series of contests in various branches of sport. The organization is known as the Rubber Industries Athletic League and at present includes the following firm members: Ajax Rubber Co., Empire Tire Co., Federal Rubber Co., Firestone Tire & Rubber Co., The Goodyear Tire & Rubber Co., The B. F. Goodrich Rubber Co., Globe Rubber Tire Manufacturing Co., Keystone Tire & Rubber Co., Kelly-Springfield Tire Co., Miller Tire Corp., Pennsylvania Rubber Co., Sterling Tire Corp. and United States Rubber Co. The officers are: President, P. C. Boizenmayer, United States Rubber Co.; vice-president, H. A. Demarest, The B. F. Goodrich Rubber Co.; secretary, J. L. Wood, Ajax Rubber Co., Inc.; treasurer, B. Greene, Sterling Tire Corp.

A baseball schedule has been arranged and the following firm members will have teams in the field: Ajax Rubber Co., Inc., Firestone Tire & Rubber Co., The B. F. Goodrich Rubber Co., The Goodyear Tire & Rubber Co., Globe Rubber Tire Mfg. Co., Kelly-Springfield Tire Co., Sterling Tire Corp., United States Rubber Co. The games will be played on diamonds around New York, and should furnish some lively entertainment, as the rivalry is sure to be keen. Several trophies have been arranged for and will be displayed in the show windows of the interested companies from time to time.

ANNUAL SPRING CROP OF FIBER SOLE BILLS.

Within the last few years several state legislatures have had presented for enactment numerous "pure shoe bills," all of which have failed of passage. A recent bill introduced in the Wisconsin Legislature "relating to the sale of wearing apparel made out of artificial substances, and providing a penalty" was so loosely drawn that the use of fiber soles would be prohibited unless the manufacturers of such soles designate every ingredient entering into the sole, and the exact percentage of such ingredient therein contained. Fines of \$10 to \$1,000, or imprisonment for not more than six months, or both, are named as a penalty.

Luckily the author of the bill, having been shown its absurdity, consented to an indefinite postponement of its consideration, and manufacturers of fiber soles may continue to guard the secrets of their products. Not long ago a similar bill was introduced in the Iowa Legislature.

M. & A. M. A. ENTERTAINS TRADE JOURNALISTS.

Prompted by the desire to know better the trade journal men and others connected with the various trades interested, the directors of the Motor and Accessory Manufacturers' Association gave them an informal dinner on April 18, 1919, at the Transportation Club, New York City, as follows:

"Motor"—E. C. Wright, business manager; Alexander Johnson, editor, "Motor Life"—T. W. Snead, treasurer, and C. B. Ames, business manager, "The India Rubber World"—W. M. Morse, "Class Journal"—David Beecroft, directing editor; W. I. Ralph, vice-president. "Automobile Topics"—Niran Bates Pope, editor. Motor and Accessory Manufacturers' Association—C. E. Thompson, president; C. W. Stiger, A. W. Copland and E. W. Beach, directors; M. E. Heminway, general manager; C. A. Burrell, manager credit department; Sidney S. Meyers, general counsel. Federal Highway Association, Washington, D. C.—S. M. Williams, president.

TRADE NOTES.

The New York Rubber Co., 84 Reade street, New York, has removed its mechanical goods factory from Matteawan to Beacon, New York.

The Belmont Packing & Rubber Co., Philadelphia, Pennsylvania, has removed its New York office and stock room to 99 Chambers street, New York City.

The Burdick Tire and Rubber Co., Noblesville, Indiana, is building a reinforced concrete three-story factory, 100 by 200 feet, and a power plant 100 by 100 feet, in which it will manufacture its shingle-construction patented tire. A temporary plant is being operated until the permanent one is ready for occupancy. The officers of the company are: John P. McKinley, president; A. S. Burdick, vice-president; R. H. Mather, secretary and counsel. The Chicago office is in the Consumers Building.

The Triple Tread Tire Co., a Delaware corporation with its business office at 1442 South Michigan avenue, Chicago, Illinois, has been granted authority to do business in Platteville, Wisconsin, where it has appointed James F. Gibson its agent. H. G. Lund is president of the company.

The Super Tread Tire Co., Cedar and Emerick streets, South Bend, Indiana, manufacturer of tires and repair material, has increased its capital stock from \$5,000 to \$100,000. C. L. Smith is president of the company.

The Washington Rubber Co. of Pennsylvania, Washington, Pennsylvania, manufacturer of tires and inner tubes, has elected the following officers and directors for the current year: J. L. Lockhart, president; Dr. S. L. McCurdy, vice-president; B. F. Mevay, secretary and treasurer; John Warrick, T. W. D. Heiber, and Burt S. Shafer. T. R. McKennan is general manager.

The International India Rubber Corp., manufacturer of "South Bend" tires, South Bend, Indiana, has elected the following officers for the ensuing year: G. W. Odell, president and treasurer; Peter E. Studebaker, vice-president; J. A. Bennett, secretary; directors: C. W. Truxell and J. W. Ridge. The company is to extend the length of its main factory building to 967 feet, in which additional equipment will be installed to increase the output of the plant to double its present volume.

The Rawlings Manufacturing Co., Lucas avenue and 23d street, St. Louis, Missouri, manufacturers of the "Ruko" game balls and other athletic goods, has opened an office at 28 Broadway, New York City, in charge of J. G. Smith. Richard Jackson, Jr., will represent the concern in the West, with headquarters in San Francisco.

The Allen Machine Co., Erie, Pennsylvania, manufacturer of rubber mill machinery, has elected the following officers: E. E. Allen, president; J. A. Himrod, vice-president; A. G. Scheidenhelm, secretary; and P. A. Himrod, treasurer.

T. A. Desmond & Co., 949 Broadway (Flatiron Building), New York City, is a new firm formed by Thomas A. Desmond and Herbert S. DeLanie to deal in crude rubber. Both partners were formerly in the employ of Robinson & Co., New York City, importers of crude rubber.

F. A. Reichard, Inc., and J. W. Coulston & Co., New York City, importers and dealers in rubbermakers' colors and chemicals, have consolidated and will conduct their business, after May 1, 1919, under the name of Reichard-Coulston, Inc., at 303 Fifth avenue. The business management and policy will remain the same. The officers are: J. W. Coulston, president; A. Paluel de Marmon, vice-president; J. W. Bossert, treasurer; and W. I. Coulston, secretary.

The Cutler-Hammer Manufacturing Co., Milwaukee, Wisconsin, manufacturer of electric controlling devices, has transferred E. C. Cherrington and T. R. Cooley from the sales service department of the Milwaukee office to the Pittsburgh, Pennsylvania, office of the central district, as office manager and engineering correspondent, respectively.

Morgan & Wright, Detroit, Michigan, are building a seven-story warehouse extension, 140 by 170 feet.

The Federal Rubber Co., Cudahy, Wisconsin, has just completed a six-story building 443 by 145 feet, the construction of which was delayed during the war. It is being used for increased production of mechanical rubber goods, including hose, packing, heels and soles, and molded goods.

The Kelly-Springfield Tire Co., New York City, has increased its common stock from \$5,029,900 to \$10,000,000 and decreased its preferred stock from \$3,990,300 to \$3,900,300. Accordingly, 900 shares of the preferred stock have been purchased by the company for its special surplus account and duly cancelled, which out of the increase in common stock a quarterly dividend of three per cent on the common stock, in addition to the cash dividend of \$1 per share, has been declared, beginning May 1, 1919.

The Keystone Tire & Rubber Co., Inc., New York City, has elected the following officers: L. Walter Lissberger, president; Sydney Bernheim, vice-president; Walter Loewenthal, secretary, and Joel Jacobs, treasurer.

The Prospect Tire & Rubber Co., 225 Delaware avenue, Buffalo, New York, a newly incorporated concern for the manufacture of cord tires to be sold direct to the consumer, will locate its factory at Prospect, Chautauqua County, New York. The officers are: James T. Barnes, president; J. H. Prendergrast, vice-president, and J. L. Rosenblatt, secretary and treasurer. The company is capitalized at \$500,000, of which \$300,000 is common stock and the balance preferred.

The Quality Tire & Rubber Co., 1101 Main street, Anderson, Indiana, is installing machinery in the newly completed addition to its factory in which it will start manufacturing automobile tires and tubes about June 1, 1919. C. J. Hodges is general manager.

The Kelly-Springfield Tire Co., New York City, has taken over the business of the Boss Rubber Co. in several western cities, where it will operate Kelly-Springfield branches as follows: 1550 Broadway, Denver, Colorado, H. E. Gabriel, manager; 27 West Fourth South street, Salt Lake City; Utah, George V. Porter, manager, and 120 West Broadway, Butte, Montana, C. D. Cole, manager.

The Fort Wayne Tire and Rubber Manufacturing Co., Fort Wayne, Indiana, has increased its capital from \$500,000 to \$1,000,000.

The Lee Rubber & Tire Corporation, 61 Broadway, New York City, at the annual meeting of the company on March 27, 1919, increased the number of its directors from nine to eleven and elected officers as follows: H. C. Coleman, J. Carl DeLaCour, John M. Dettra (assistant secretary), James A. Fayne, S. B. Fleming, Albert A. Garthwaite (vice-president and treasurer), Walter H. Herrick, Horace C. Jones, Samuel H. Miller, John J. Watson, Jr. (president), and Joseph Wayne, Jr. Henry Hopkins, Jr., is secretary of the company.

The Newman Tire & Rubber Co. has removed its general office and warehouses to 244-246 West 54th street, New York City, and is making this the distributing point for merchandise to its several stores in New York and out of town. Both retail and wholesale business is conducted.

The Quabaug Rubber Co., North Brookfield, Massachusetts, has recently made a number of changes in the personnel of its organization. The officers are: Thomas G. Richards, president and sales manager; C. A. Evans (Merchants National Bank, Worcester), treasurer; directors, in addition to the foregoing—Frank A. Drury (Merchants National Bank, Worcester), Henry Drew (National Union Bank, Boston), Frank Smith (attorney, Worcester), Walter T. Bucklin (Liberty Mutual Insurance Co., Boston), and William Edmunds (investments, Boston). Charles Burgess has resigned from his positions as director, treasurer, and sales manager of the company, as have also Eugene de Rozier as chief chemist and F. W. Tingley as engineer.

The H. H. Robertson Co., First National Bank Building, Pittsburgh, Pennsylvania, dealer in building products, is now supplying Robertson "M. R." (mineral rubber) to the trade in different grades. The company has secured the services of H. B. Pullar and J. S. Ervin, formerly with the Pioneer Asphalt Co., Lawrenceville, Illinois, to take charge of the production department.

The Inland Rubber Co., La Salle and 27th streets, Chicago, Illinois, expects to complete by the middle of July the two-story extension which it is now building, 87 by 112 feet, at a cost of \$50,000.

The United States Rubber Co. is transferring its store in Burlington, Vermont, from Cherry street to 109 College street where two stores will be occupied.

The Service Tire & Rubber Co. has opened a store at 70 Maine street, Auburn, Maine, under the ownership of Mitchell Zelmer and Maurice Leavitt who have recently been discharged from the Navy. This is the only store serving Lewiston and Auburn which makes a specialty of tires of exclusive makes.

The Hohmann-Nelson Co., Eau Claire, Wisconsin, has recently been incorporated to manufacture automatic temperature, pressure and time controllers, also thermometers, recorders, etc., and in several months will be ready for active operations. The officers of the company are: A. B. Hohmann, president; A. J. Nelson, vice-president and secretary; Edward Hutchens, treasurer. These men are well known to rubber manufacturers, having specialized in the development of automatic control as applied to all methods of vulcanization and personally supervised many of the larger installations of such systems.

The Katzenbach & Bullock Co., Inc., 100 William street, New York City, has been appointed sole selling agent for the products of the Nevim Chemical Co., St. Louis, Missouri, manufacturer of high-grade barium products and chemicals for the rubber trade.

The Braender Rubber & Tire Co., Rutherford, New Jersey, will remove its export department from 315 Fourth avenue to 32 Broadway, New York City, on May 1, 1919. It has also appointed the Ryan & Hughes Co., Inc., 1698 Broadway, distributor of Braender tires and tubes in New York City and on Long and Staten Islands.

The Climax Rubber Co., manufacturer of a line of dress shields, sanitary aprons, baby pants, and rubber novelties, has moved to 520 Broadway, New York City.

The plants of the American Rubber Products Co. and the New-castle Rubber Co. have been taken over by a group of Akron and Cleveland rubber manufacturers. Automobile tires are made at the Newcastle plant and the output will be considerably increased. The new company is headed by F. E. Harmon of the Universal Rubber Co., Cleveland, and Fred E. Seiberling, Akron, Ohio.

F. R. Henderson & Co., crude rubber importers, have removed their New York City offices from 82 Beaver street to the Trinity Building, 111 Broadway.

The Gates Rubber Co., Denver, Colorado, is building two new factory units, one of two stories and one of four, and a four-story warehouse.

The Rubber Tire Supply Co., Inc., 420 St. Louis street, Springfield, Missouri, has increased its capital stock from \$10,000 to \$20,000. The officers of the company are: C. E. Randall, president; F. S. Bauersfeld, secretary, treasurer, and manager; J. L. Hines and D. J. Landers, vice-presidents.

The Automatic Safety Tire Valve Corp., 199-203 Eighth street, Long Island City, New York, has opened executive and sales offices at 1765 Broadway, suite 605, New York City. The officers of the company are: G. H. Crossan, president; S. X. Newman, vice-president; H. A. Tremaine, treasurer; and C. R. Tock, secretary.

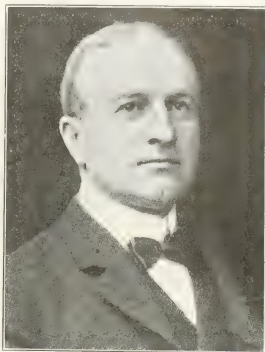
Albert V. W. Tallman, crude rubber broker, has removed from 54-56 Stone street to 280 Broadway, New York City.

LESTER LELAND.

AN important new office, created at a recent meeting of the directors of the United States Rubber Co., was that of vice-chairman of the Executive Committee. To that office Lester Leland, vice-president of the company was elected. Associated

with the great rubber company in important capacities almost from its inception, Mr. Leland's career affords an interesting study.

He was born in Boston, Massachusetts, July 20, 1864, the son of Lester and Mary (Babcock) Leland. Educated in the public schools of that city, he graduated from the English High School, and after a course at a business college, he entered the office of C. A. Richards, president of the Metropolitan Street Railway, Boston. Some



LESTER LELAND

years afterward, he was elected treasurer of the Boston Heating Co., and later was appointed superintendent of buildings and purchasing agent of the Metropolitan Telephone Co. of New York City, which position he held until 1893, when he was made assistant treasurer of the Boston Rubber Shoe Co., advancing to the treasurership two years later. When this company was purchased by the United States Rubber Co. in 1898, he became identified with the management, serving on the board of directors, and filling the office of vice-president for many years, and assuming his present position and title a month or two ago.

Mr. Leland is a man of many interests. In addition to his connection with the United States Rubber Co. and its subsidiaries, he assists in the management of the American Trust Co., Rubber Mutual Liability Insurance Co., Rubber Manufacturers' Mutual Insurance Co., Industrial Mutual Insurance Co., Cotton and Woolen Manufacturers' Mutual Insurance Co., Arkwright Mutual Fire Insurance Co., all of Boston, Massachusetts; The Atlantic Coast Lumber Corp. and United Timber Co. of New York City, the Oneida Timber Co., Georgetown, and the Pacific & Idaho Northern Railway.

Mr. Leland served several years in the Massachusetts Volunteer Militia, reaching the grade of Captain and Provost Marshal of the Second Brigade. He enlisted in the war with Spain as Second Lieutenant in C Company, Fifth Massachusetts Infantry. His two sons are at present in service, having enlisted in the present war.

Mr. Leland is fond of outdoor sports, his favorite pastimes being riding, tennis, and golf. He is a born organizer and adjuster of industrial difficulties. Quiet, tactful, unassuming, a man of few words, and of keen judgment, he has the confidence and respect of all. In the company with which he has so long been identified, he has done much to bring it to its present condition of greatness and efficiency.

Replete with information for rubber manufacturers—H. C. Pearson's "Crude Rubber and Compounding Ingredients."

CHEMIST AND SALES MANAGER.

Louis J. Plumb, M. A., is well known in every branch of the American rubber trade, through his position as both chemist and manager of sales of a rubber reclaiming company.



LOUIS J. PLUMB, M.A.

Mr. Plumb graduated from Princeton University in 1904, beginning at once his chemical career in the laboratory and dye works of Klipstein & Co., New York. His preference, however, was for the rubber industry, and the following year he became chief chemist of the United States Rubber Reclaiming Co., and established a factory control and research laboratory at their Buffalo plant. Mr. Plumb was awarded his Master's degree from Princeton on the presentation of a thesis on the chemistry of rubber and methods of its analysis. For a number of years the material thus presented was used as a laboratory

text until the appearance of more elaborate works on the subject by other chemists. He is probably the first rubber chemist to establish brands of reclaimed rubber on a purely technical basis, such as standardizing output on guaranteed content of rubber, acetone extract, and physical characteristics, and their technical presentation to the manufacturer.

Mr. Plumb represented his company at the Fourth International Rubber Congress held in London, England, in July, 1914. On that occasion he toured the Scandinavian countries, Holland, Belgium, France, and Germany, in the interest of reclaimed rubber as an important factor in the rubber manufacturing industry. While on this mission he was in Berlin when the world war broke out, and was detained there four weeks during German mobilization and the violation of Belgium.

Mr. Plumb is a member of various business, athletic, social, and scientific bodies. Among the latter are the American Electro-Chemical Society and the American Chemical Society. He is a member of the Executive Committee of the Rubber Section of the latter society and chairman of the Rubber Section's Jar-Ring Committee, which is actively cooperating with the Department of Agriculture on the standardization of jar rings.

DU PONT COMPANY ELECTS OFFICERS AND DIRECTORS.

E. I. du Pont de Nemours & Co., Inc., Wilmington, Delaware, manufacturer of colors and chemicals, Fabrikoid, etc., at its recent annual meeting elected the following officers and directors: Pierre S. du Pont, president; vice-presidents, H. F. Brown, E. G. Buckner, R. R. M. Carpenter, F. L. Connable, William Coyne, Irenée du Pont, Lammet du Pont, H. G. Haskell, J. A. Haskell, Charles L. Patterson, F. W. Pickard, J. J. Raskob, and F. G. Tallman; secretary, Alexis I. du Pont; treasurer, F. D. Brown; assistant treasurers, Charles Copeland, Angus B. Echols, W. F. Raskob, J. K. Rodgers, and William F. Saltmarsh; assistant secretaries, L. R. Beardslee and M. D. Fisher; directors, all of the above and in addition, A. Felix du Pont, Eugene du Pont, Eugene E. du Pont, H. F. du Pont, P. S. du Pont, J. P. Laffey, Charles A. Patterson, H. M. Pierce, and Charles L. Reese.

Since the above elections were made, Pierre S. du Pont has resigned from the presidency of the company and become president of the board of directors. Irenée S. du Pont, chairman of the executive committee, has been made president of the company. These changes became effective May 1, 1919, and are said to have been made because of business conditions following the war.

WESTINGHOUSE DISPOSITION OF BRITISH INTERESTS.

General Guy E. Tripp, chairman of the board of directors of the Westinghouse Electric & Manufacturing Co., New York City and East Pittsburgh, Pennsylvania, has recently returned from a trip abroad, as the result of which an agreement has been reached with important British interests whereby the Westinghouse company sells for cash its British holdings.

This sale is subject to the successful accomplishment of certain legal details in Europe, which may be waived by the company if considered desirable.

The Westinghouse company now plans to enter into a commercial alliance with a view to developing export business. No further details can be announced at the moment, but the plan will be put into execution immediately on the assumption that the British transaction will be consummated on one of the bases indicated.

PERSONAL MENTION.

Thomas R. Burton has been appointed assistant to George S. Shugart, general branch sales manager of the United States Tire Co., with headquarters at 1790 Broadway, New York City.

W. E. Byles, crude rubber broker, has removed from 59 Broad street to 140-142 Pearl street, New York City.

John A. Glaspy, former manager of the Milwaukee, Wisconsin, branch of the Kelly-Springfield Tire Co., has become assistant general sales manager of the International India Rubber Corp., manufacturer of "South Bend" tires, South Bend, Indiana.

L. I. Seaman, 215 West 51st street, New York City, has been designated as the representative of The Canton-Blackstone Co., formerly the Knight Tire & Rubber Co., Youngstown, Ohio, which has been authorized to do business in the State of New York.

J. E. Duffield, formerly general manager and treasurer of the Bailey Non-Stall Differential Corp., has been elected vice-president in charge of the sales division of The Essenkay Products Co., Chicago, Illinois, manufacturer of the "Essenkay" tire filler.

William R. Eales, of The South African Rubber Manufacturing Co., Johannesburg, South Africa, arrived in New York last month on a business visit.

Francis R. Henderson, F. R. Henderson & Co., New York City, returned from London last month.

Charles T. Wilson, Charles T. Wilson Co., Inc., New York City, has gone to England on business.

G. A. Avey, of W. & A. Bates, Limited, Leicester, England, is in this country for a brief visit.

W. M. Doucette has been appointed Eastern district manager of The Mason Tire & Rubber Co., Kent, Ohio, with headquarters at the New York City branch, 235 West 58th street.

J. V. Aguirre is in charge of the export department of The Mason Tire & Rubber Co., Kent, Ohio, at 235 West 58th street, New York City.

C. L. Falkenburg has been appointed representative of the Voorhees Rubber Manufacturing Co., Jersey City, New Jersey, at Jackson, Michigan, in its automobile accessory department, and will cover the States of Michigan, Ohio, Illinois, Indiana, Kentucky, Tennessee, and Alabama.

W. L. Baumbach, formerly operating the Badger Tire Repair Co., distributor of Firestone and Kelly-Springfield tires, in Milwaukee, Wisconsin, has disposed of the business and will represent the International India Rubber Corp., South Bend, Indiana, manufacturer of "South Bend" tires, as manager of its central district.

Edward H. Garcin, president of the Asbestos and Rubber Works of America, New York City, has been elected a director

of the Gotham National Bank, succeeding the late Dr. Thomas Kelly.

Harold H. Henderson, of F. R. Henderson & Co., crude rubber importers, 111 Broadway, New York City, started last month on a combined business and pleasure trip to the Far East.

W. R. Robinson, manager for W. R. Grace & Co., crude rubber importers, in Seattle, Washington, has been elected vice-chairman of the Foreign Trade Bureau of the Seattle Chamber of Commerce and Commercial Club.

R. J. Devereaux is manager of the Bangor, Maine, store of The B. F. Goodrich Co., Akron, Ohio.

A PIONEER IN TIRE REPAIRING.

TO have started business in a one-story shop, and, unaided by a dollar of outside capital, develop a nation-wide business, employing hundreds of skilled workmen, is something of which one may well be proud. This, in brief, is the record of Charles E. Miller, proprietor of the Anderson Rubber Works, Anderson, Indiana, where, in two big factories, he manufactures tire-making machinery, tire-repairing equipment and tires.

Mr. Miller claims to have designed the first tire-repair vulcanizer, and to have done the first repairing job seven years before any other tire vulcanizer appeared on the market. He was born in 1874, in Prairie, Ohio, and with his parents moved to Huntington County, Indiana, where he worked on a farm while acquiring what education the country school afforded. The purchase of a high-wheel bicycle influenced his choice of a vocation, and he secured employment in a bicycle factory at Marion, Indiana. Noticing the great waste in consigning to the junk heap so many burst tires, he conceived the idea of a vulcanizer to repair them. He made patterns, and when the local foundry declared it impossible to make such castings, he made the cores himself, and directed the successful making of the first steam-jacketed tire vulcanizer. Soon he was busy, outside of his factory working hours, repairing bicycle tires for the people in his vicinity. Finally he accumulated \$300 and with this capital he opened a vulcanizing and bicycle shop, a little one-story affair, at Anderson, Indiana.

The business was successful from the start, and with the automobile came the demand for the repair of larger tires for which larger vulcanizers were built. In 1902 when the clincher tire came into use, he designed a sectional vulcanizer for repairing it. In 1911 he invented an adjustable vulcanizer, which permitted adjustment for all sizes of tires. As needs developed, machines and appliances were devised. Inventions and improvements followed fast, for by this time the little repair shop had given place to a big factory where everything needed in the growing business of tire repairing was made and the business of supplying repair shops all over the country was developing. Besides tire repair outfits, he has added the manufacture of vulcanizers for repairing and soling rubber footwear.

Later the manufacture of tires was added, a new system being perfected for making an improved "cog tread" tire, which is neither a wrapped tread, nor a full molded tread, for which a number of advantages are claimed.

Mr. Miller is most democratic as an employer, and is idolized by his employees. He has established an annual profit-sharing

plan for faithfulness and efficiency in all departments of his factories. He is highly respected in his community, is a member of the Elks, Knights of Pythias, Masonic bodies, Y. M. C. A., Rotary Club, Chamber of Commerce, and the Manufacturers' Association.

FROM WAR SERVICE TO MOTOR ACCESSORIES.

ONE of the live wires in the rubber war work, Montie L. Heminway, has been honored by the appointment as general manager of the Motor and Accessories Manufacturers' Association. A brief outline of his business career is therefore of interest.

Mr. Heminway was born in Somerville, Massachusetts, December 11, 1877, and educated in the Somerville public schools. His early business experience was gained in the shoe industry, first with the Regal Shoe Co., Boston, where he was general office manager and later as sales manager for the Charles A. Easton Co., a well-known shoe manufacturing concern in Brockton, Massachusetts.

His experience in the rubber business began when he entered the sales department of the Davidson Rubber Co., Charlestown, Massachusetts, of which concern he was sales manager for seven years.

When the War Service Committee of the rubber industry was formed, Mr. Heminway was appointed its secretary, with offices in Washington and New York, and the duties of this important position were filled with ability and credit, until the work of the committee ceased with the signing of the armistice.

At this time L. M. Bradley, the general manager of the Motor and Accessory Manufacturers' Association, was incapacitated by illness, and Mr. Heminway was called to take the temporary management of that association. Later, Mr. Bradley tendered his resignation and Mr. Heminway was appointed his successor.

Now that the scope of the association has been materially enlarged, the position is assuming an added importance. The association now has a credit department which is pronounced the most complete and satisfactory source of credit information in the motor and accessory industry, and plans are being formulated for further extension of this department, as well as for developing other features of trade association work, in all of which Mr. Heminway's experience and ability will prove of the greatest possible value.



M. L. HEMINWAY.



CHARLES E. MILLER.

"DOLLAR EXCHANGE."

That the United States has displaced England and all other pre-war creditor countries in supplying long-time money for the financing of industry and transportation was pointed out by D. H. G. Penny, vice-president of the National Bank of Commerce, New York City, in an address on "Dollar Exchange" at the convention of the Association of Reserve City Bankers at New Orleans, March 31, 1919.

Mr. Penny showed that, before the war, the volume of dealing in various kinds of foreign exchanges in Buenos Aires would rank in the following orders: Pounds sterling, reichsmarks, Paris francs, Belgian francs, United States dollars.

He showed that at the present time every bank of consequence in foreign countries has one or more accounts in the United States, whereas before the war many foreign countries had no correspondents at all here. He declares that London's embarrassment is temporary and that Great Britain is still doubtless a creditor nation. He cautions America that we should compete with England by fair methods, never forgetting that "brave old England has borne the heat and burden of the day."

"England has been generous to us in the past, and England deserves well of us to-day," says Mr. Penny. "Civilization has been saved from Germany, but it must now be saved from poverty and economic shipwreck. The whole world looks to America and America will not be found wanting."

A RUBBER ENGINEERING SPECIALIST.

GEORGE W. BURRELL, works manager, who is now also second vice-president of the Wellman-Seaver-Morgan Co., Akron, Ohio, has steadily risen through his 21 years' service with the above named rubber engineering company.



G. W. BURRELL.

Born in 1871, his early education was secured at the public schools of Cleveland, Ohio. Leaving school at the age of 14, he spent the next five years working in machine shops, mastering the mechanical principles of the trade, meanwhile studying at night to prepare for college. In 1891 he entered Ohio State University, taking a three years' course in mechanical engineering.

Thus having fitted himself both in theory and practice, he entered the employ of the above-named company in 1898 as draughtsman. After three years he was appointed inspector, and in the next two years was promoted successively to chief inspector, assistant purchasing agent, assistant secretary, and assistant works manager. For 14 years he has held the last-mentioned position, his duties increasing with the steady growth of the business, and in May, 1917, he was made manager of works, and now has entire charge of the company's works at Akron and Cleveland, Ohio.

FINANCIAL STATEMENT OF PLYMOUTH RUBBER CO.

The condensed balance sheet of the Plymouth Rubber Co., Canton, Massachusetts, shows the following figures for the year ended December 31, 1918:

ASSETS.		
Fixed assets (at book value):		
Real estate, buildings, machinery, equipment, etc.	\$899,136.80	
Less: Reserve for depreciation	100,000.00	
Patents and trade marks	\$796,136.80	
	100,000.00	
Total fixed assets	\$899,136.80	
Current assets:		
Cash in banks and on hand	105,250.47	
Accounts and notes receivable, after deducting estimated reserves for doubtful items, discounts, etc.	319,298.64	
Inventory of merchandise, goods in process, etc.	673,344.13	
Liberty bonds and war saving stamps	\$98,468.55	
Deduct unpaid instalments not due and payments by employees	62,570.35	
Total current assets	\$3,898.20	
Total assets	\$1,133,791.44	
Investment in treasury stock—1,752 shares of the company's common stock at book value	171,800.00	
Sinking fund—cash available for retirement of preferred stock	2,975.31	
Deferred expense for taxes, insurance, interest, experimental work, and advertising	40,719.97	
Total assets	\$2,248,423.52	
LIABILITIES.		
	Authorized.	Issued.
Capital stock:		
7% cumulative preferred stock, par value \$100.00	\$500,000.00	\$400,100.00
Common stock, par value \$100.00	1,000,000.00	1,000,000.00
Total capital stock		\$1,490,100.00
Current liabilities:		
Accounts payable	243,511.41	
Notes payable	350,000.00	
Accrued taxes, etc.	9,836.64	
Total current liabilities		\$603,348.05
Sinking fund reserve for preferred stock		6,775.31
Surplus, after providing for dividend on preferred stock		148,200.16
Total liabilities, capital, and surplus		\$2,248,423.52

The accounts of the company were audited by Patterson, Teele & Dennis, Boston, Massachusetts, who certified to the correctness of the above figures. All doubtful items were verified as far as possible through careful estimates, correspondence with banks, consultation with the officials of the company, etc.

WALLACE S. CLARK.

WALLACE S. CLARK was born in Watertown, New York,

October 13, 1864. After preparing for college at Hopkins Grammar School, he entered the Sheffield Scientific School of Yale University, graduating in 1885. He then went to work for the Edison interests, and has been with them and their successor, the General Electric Co., ever since. He took charge of the wire and cable department of the General Electric Co., Schenectady, New York, in 1892, and at that time became interested in the manufacture of rubber-insulated conductors of electricity. Mr. Clark has recently served as the chairman of the insulated wire and cable division of the War Service Committee of the Rubber Industry of the U. S. A.



W. S. CLARK.

STATEMENT OF THE INDIA RUBBER WORLD.

Statement of the ownership, management, etc., required by the Act of Congress of August 24, 1912, of THE INDIA RUBBER WORLD, published monthly at New York, New York, for April 1, 1919.

STATE OF NEW YORK, }
COUNTY OF NEW YORK, } ss:
Before me, a notary public in and for the State and county aforesaid, personally appeared E. M. Hoag, who, having been duly sworn according to law, depose and says that he is the business manager of THE INDIA RUBBER WORLD, and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management, etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 443, Postal Laws and Regulations, printed on the reverse of this form, to-wit:

That the names and addresses of the publisher, editor, managing editor, and business managers are:

Publisher, The India Rubber Publishing Co., 25 West Forty-fifth street, New York City.
Editor, Henry C. Pearson, 83 Agawam Road, Waban, Massachusetts.
Managing Editor, Henry C. Pearson, 83 Agawam Road, Waban, Massachusetts.
Business Manager, E. M. Hoag, 25 West Forty-fifth street, New York City.

2. That the owners are: (Give names and addresses of individual owners, or, if a corporation, give its name and the names and addresses of stockholders owning or holding 1 per cent or more of the total amount of stock.) Henry C. Pearson, 83 Agawam Road, Waban, Massachusetts.

3. That the known bondholders, mortgages, and other security holders owning or holding 1 per cent or more of the total amount of bonds, mortgages, or other securities are: (If there are none, so state.) None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by her.

E. M. HOAG, Business Manager.

Sworn to and subscribed before me this 31st day of March, 1919.

[S.W.]

FREDR. SPRENGER.

Notary Public Westchester County.

Certificate filed in New York County.

My commission expires March 30, 1920.

New York County Clerk No. 186. Register's No. 10188.

F. R. HENDERSON & CO. OPEN LONDON HOUSE.

F. R. Henderson & Co., crude rubber importers, New York City and Akron, Ohio, have recently established a London house under the firm name of Henderson, Forbes & Co., Limited, with offices at 11 Hart street, Mark Lane. The associates are David S. Forbes, formerly with Harrison & Crossfields; John R. McIntosh, who was also with the same firm in the Far East; and Hanford M. Henderson from the New York office.

THE RUBBER TRADE IN OHIO.

By Our Special Correspondent.

AKRON rubber manufacturers are giving special attention to the probable ultimate scope of American business in foreign markets. F. E. Titus, recently appointed foreign sales manager of The B. F. Goodrich Rubber Co., believes that whether



F. E. TITUS.

or not the American manufacturer will continue to hold his own and develop business along firm, steady lines in the various foreign markets which have been recently opened to him, will depend largely on the quality of his product and proper methods of economical distribution, as well as the adaptation of his merchandise to the service needs of the countries into which it goes, and the definite policy of standing behind his product.

Mr. Titus brings a wide experience to his new position, having formerly been assistant to First Vice-President H. E.

Raymond in handling foreign business, and prior to that successively manager of the branches of the company in Pittsburgh, Pennsylvania, and Buffalo, New York.

AKRON NOTES.

The B. F. Goodrich Rubber Co., Akron, Ohio, reports its classes in tire repairing are larger this year than ever before. Besides the actual experience the student gets at the bench and vulcanizer, lectures on advertising, salesmanship, bookkeeping, business correspondence, etc., as applied to successful garage operation, are also given. The latest tire repair class opened April 28, 1919.

The Firestone Tire & Rubber Co., Firestone Park, Akron, Ohio, is completing its new plant, known as No. 2. During the war it was utilized for balloon manufacture, but will now be devoted to the production of tires and tubes. It is built of brick, concrete, glass, and steel, and is practically fireproof. Electric conveyors eliminate the use of many trucks and unnecessary motion on the part of employees.

The J. Frank Dunbar Co., Inc., 82 Beaver street, New York City, dealer in crude rubber, has opened an office at 610 Flatiron building, Akron, Ohio, in charge of J. Richard Stanley. Mr. Stanley was until recently with Akron office of Pell & Dumont, Inc., crude rubber brokers.

The Akron Equipment Co., Akron, Ohio, manufacturer of rubber tire molds and cores, machinery, dies, etc., is building an addition of brick and steel construction, 60 by 77 feet, of which one-half is an addition to the "heavy shop" where tire vulcanizing presses are made and the other half forms a two-story addition to be used for tire mold and core work and office purposes. The building will be completed about May 1, 1919.

The Akron Rubber Mold & Machine Co., Akron, Ohio, is enlarging its tire repair equipment department in order to take care of increasing business. It has also purchased land and buildings adjoining its property, which it expects to utilize in extending its plant in the near future.

The Firestone Steel Products Co., Firestone Park, Akron, Ohio, has appointed Paul R. Higginbotham, recently a captain in the Ordnance Department, as assistant to J. G. Swain, vice-president and manager of the company.

The Firestone Steel Products Co., Firestone Park, Akron, Ohio, has appointed Lawrence W. Enos, recently a first lieutenant in the Quartermaster's Corps, manufacturer's representative in the Detroit district.

Jones & Kuhlke, West Exchange and Water streets, Akron, Ohio, manufacturers of automobile tire molds and cores, special machinery, etc., have incorporated and changed the name of their organization to The Kuhlke Machine Co.

The Portage Rubber Co., Akron, Ohio, at its annual meeting held January 14, 1919, elected the following officers: W. W. Wildman, president and general manager; M. S. Long, vice-president; L. E. Larson, secretary-treasurer. The company is now installing a new mill room and expects to increase its tire output 50 per cent by April 15. The company is adding new machinery to its equipment to take care of additional business.

The Portage Rubber Co., Akron, Ohio, has appointed Roscoe M. Gage chief chemist, in charge of its laboratory and development work and fabrics. Mr. Gage was formerly with The Fisk Rubber Co. of New York, Chicopee Falls, Massachusetts, and the New Jersey Car Spring Co., Jersey City, New Jersey, and more recently supervisor of gas-mask manufacture in Akron rubber factories as a first lieutenant in the Chemical Warfare Service.

The General Tire & Rubber Co., Akron, Ohio, has increased the mileage guaranty on its "Jumbo" tire from 5,000 to 7,000 miles. This is a special oversize tire for Fords, Maxwells, Chevrolets, and other light cars using 30 by 3½-inch rims.



W. H. STILLWELL.

W. H. Stillwell, former Akron representative of the Westinghouse & Electric Manufacturing Co., East Pittsburgh, Pennsylvania, has been placed in charge of the newly opened Akron office of the Allen Machine Co., Erie, Pennsylvania, manufacturer of rubber-working machinery.

The Miller Rubber Co., Akron, Ohio, has elected the following officers for the current year: Jacob Pfeiffer, president; C. T. Grant, vice-president; William T. Pfeiffer, secretary and treasurer; J. M. Doran and F. B. Theiss, directors, in addition to the foregoing.

H. Parker Lowell has been appointed editor of "Miller Talk," the house organ of The Miller Rubber Co., Akron, Ohio, which suspended during the war. Mr. Lowell was formerly a member of the copy staff of The B. F. Goodrich Co.

Edward Maurer Co., Inc., New York City, dealer in crude rubber, has opened an office in Akron, Ohio, in the Metropolitan Block, in charge of Adam T. Dealaman.

Katzenbach & Bullock Co., Inc., New York City, manufacturer, importer, and exporter of chemicals and colors for the rubber and allied trades, has opened an office in the Metropolitan Building, Akron, Ohio, in charge of A. W. P. Barber as manager.

The Amazon Rubber Co., Akron, Ohio, has elected the following officers for the current year: Albert Kroehle, president; J. F. Burger, vice-president; L. J. Schott, treasurer and general manager; L. F. Smith, secretary and factory superintendent.

CLEVELAND NOTES.

The Erie Tire & Rubber Co., Cleveland, Ohio, has bought the plant of the Eagle-Macomber Co. at Sandusky, in which it plans to manufacture cord tires and tubes, under the supervision of H. H. Forrest, its vice-president and general superintendent. The other officers of the company are C. H. Berlekamp, president; C. H. Roth, secretary and sales manager; P. F. Wills, treasurer and

general manager, and F. W. Hildebrand, assistant secretary and auditor. The concern was incorporated under the laws of the State of Ohio and is capitalized at \$1,000,000, half common and half preferred stock. The company is building a three-story addition, 60 by 85 feet, to be used for curing rooms. The Osborn Engineering Co., Cleveland, has the contract.

E. S. Carman, secretary and chief engineer of The Cleveland Osborn Manufacturing Co., Inc., Cleveland, Ohio, sailed for Europe on March 6, 1919, with a party of about forty representatives of the Cleveland Chamber of Commerce. These men will assist foundries in their reconstruction work.

The McLean Tire and Rubber Co., Cleveland, Ohio, manufacturer of "Champion" tires and tubes, has increased its capital stock from \$300,000 to \$500,000, of which 3,000 shares are common stock and 2,000 shares are preferred. The company is running two shifts of workmen in its plant, producing about 500 tires and 1,200 inner tubes daily.

The McGraw Tire & Rubber Co., formerly of East Palestine, Ohio, removed its general office on March 1, 1919, to 1900 Euclid avenue, Cleveland, Ohio. The factory remains at East Palestine.

The Farrel Foundry and Machine Co. has removed its office in Cleveland, Ohio, to 802-3 Swetland Building.

The Henderson Tire & Rubber Co., Inc., Bucyrus, Ohio, manufacturer of tires and tubes, states that the loss occasioned by the fire in its plant on April 11, 1919, will exceed \$150,000, but was practically covered by insurance. The company expects to be in partial operation again by May 1 and fully by June 1.

TWO REPUBLIC RUBBER CORPORATION EXECUTIVES.

HARVEY J. WOODWARD, recently elected vice-president in charge of sales of The Republic Rubber Corp., Youngstown, Ohio, brings to his position a selling experience of eighteen years with several large tire companies, notably the Diamond Rubber Co., Akron, Ohio, where he rapidly advanced to high posi-



MARK W. ROE.



HARVEY J. WOODWARD.

tions in the sales department, and was later promoted successively to sales manager of that company's factory branches in Pittsburgh, Pennsylvania, and New York City.

MARK W. ROE, also recently elected a vice-president of the Republic company, has had over thirteen years' engineering experience with some of the largest rubber companies. For many years he was an engineer on tire production for the Dia-

mond Rubber Co., and The B. F. Goodrich Rubber Co., both of Akron, Ohio. During the past two years with the Republic company he has been engineer of rubber goods production, including pneumatic and solid tires, and mechanical rubber goods.

THE BAY STATE HONORS GOODRICH MAN.

THE election of Fred T. Moore as president of the Bay State Automobile Association is a deserved recognition of the services of that gentleman to the association of the board of governors of which he has been a member for five years.

Mr. Moore was born in Worcester, Massachusetts, August 20, 1884, attending the common and high schools in Framingham, and finishing at the Burdett Business College, Boston.

When but a boy young Moore made up his mind to be a sales executive, and prepared himself for such a position by a special course of study. Sixteen years ago he secured the position of stenographer to the manager of the Boston branch of The B. F. Goodrich Co. Beginning thus at the bottom, he rose steadily until, in 1914, he succeeded his principal, and attained the position of manager. He thus has charge in the six New England states of the sales of all the varied products of this great company.

Mr. Moore is a member of the Boston Athletic Association, the Boston City Club, the Rotary Club, and the Woodland Golf Club, his special relaxations being motoring and golf.

Mr. Moore is a member of the Boston Athletic Association, the Boston City Club, the Rotary Club, and the Woodland Golf Club, his special relaxations being motoring and golf.



FRED T. MOORE.

A SMOKELESS SMOKER.

On the evening of Saturday, April 12, 1919, the athletic association of the Miller Rubber Co., Akron, Ohio, held its second "smoker" at the Armory. Primarily, there was no smoking, which omission was amply compensated for by a highly interesting program consisting of vocal and instrumental selections (including several numbers by the Miller Saxophone Sextet) and a number of boxing contests, some of which were fairly fast. The star bout of the evening was between "Jackie" Palmer, a Millerite, and "Red" Schaeffer, who was outclassed from the start. The innovation of the evening was the event between two "African Golfers," whose gloves were smeared with white paste, which ended in both contestants being as "white as they were painted." The affair was a conspicuous success.

THE RUBBER TRADE IN MASSACHUSETTS.

By Our Regular Correspondent.

THE State of Massachusetts still maintains the leading position in the manufacture of rubber boots and shoes, as is shown by the annual report for the year 1917, which has just been published. Nine manufacturing concerns in this line have a total invested capital of \$22,224,512, and their total product was \$42,472,724. The stock and materials used cost \$17,663,113, and their 12,275 employees were paid \$8,904,564. Other manufacturers of rubber goods, represented by 41 concerns with a total capital of \$34,548,936, turned out products worth \$56,903,602.

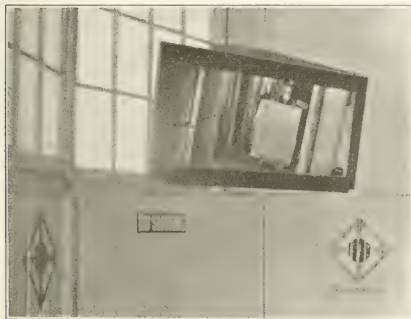
the materials for which cost \$31,479,517, and the 10,334 employees were paid \$7,970,746.

The sums of these figures give an indication of the extent of the rubber manufacturing industry in the Bay State. Fifty establishments, with an aggregate capital of \$56,773,448, manufactured goods to the value of \$99,376,326. They employed 22,609 persons, to whom they paid \$16,875,310, and consumed material, including rubber, costing \$49,142,630.

A remarkable increase in the number of persons employed in the rubber boot and shoe business is noted. In 1913 there were 4,832 male employees and 3,125 female. In 1917 the figures were 7,155 and 5,120, an increase of 48.1 per cent of male and 63.8 per cent of female workers. An even greater gain is noted in other branches of the rubber industry, for in 1913 there were 4,598 males and 805 females, and the 1917 returns show 7,980 males and 1,397 females, a total increase of 73.6 per cent.

* * *

In the factory of The Fisk Rubber Co. of New York, Chicomine Falls, Mass., an ingenious arrangement of mirrors is used to prevent collisions at angles and crossings of runways and passages. There are several "blind corners" where electric and hand trucks are used, and at each of these a mirror is so arranged that a person approaching the corner can see, reflected in the glass, the other passageway. Collisions are thus prevented. Under the mirror, and on each side, so that one of the two is visible the whole length of the passage, is painted the



BLIND CORNER MIRROR

danger emblem, adopted about two years ago by the National Safety Council as a universal danger sign.

* * *

M. M. Converse, who returned last month from a trip to Europe, is far from enthusiastic in advising others to spend vacations on the other side of the Atlantic. Mr. Converse did not go across to investigate foreign markets. On the contrary, he sought a complete respite from business. Most of his time over there, however, was spent in collecting autographs of officials on his passport in order to enter and leave the various cities he visited. His visit was unfortunately shortened because of the time necessary to fulfill the requirements imposed on all civilian travelers. Mr. Converse comes back satisfied that the United States is good enough for him, and he is not planning any more European trips in the near future.

* * *

Many members of the rubber footwear trade may remember the late John C. Balderston, of Balderston & Daggett, of this city, the selling agent of the National India Rubber Co., and were also acquainted with his son, Frank Balderston, who for many years had charge of the sales of tennis shoes for the

United States Rubber Co. Some of these may have met Frank's brother, Henry Ware Balderston, generally called "Harry" by his friends, and these will perhaps hear for the first time, from this paragraph, of his sudden death from angina pectoris, at his home in Jamaica Plain, Mass., on April 13, 1919.

As a boy he worked in his father's store, but later entered the cotton goods business, and for the last ten years he was sales agent for New England for the Amoskeag Manufacturing Co., Manchester, New Hampshire. He was 54 years of age. His widow and one daughter survive him.

* * *

Boston's gain is Akron's loss by the transfer of C. B. Linderman from the head office of the Firestone Tire & Rubber Co. to take charge of the Boston branch of that concern. Mr. Linderman has been engaged in advertising and sales department work for several years, and he is being cordially welcomed by the tire fraternity of this city.

* * *

More than 100 members of the sales and executive departments of the Boston branch of the Firestone Tire & Rubber Co., Akron, Ohio, attended a dinner at Hotel Lenox on the evening of April 11, as the close of a two-day conference of New England salesmen. Addresses were made by C. B. Linderman, manager of the Boston branch, and J. E. Mayo, New England district manager. Motion Pictures taken in the Akron factory were shown, and music for dancing was furnished.

* * *

James H. Learned, of the Revere Rubber Co., Boston, whose portrait was shown in the April number of THE INDIA RUBBER WORLD, sailed from New York on the *Aquitania* for Europe April 5. Mr. Learned includes a large part of Europe in his "territory," having "covered" many of the leading cities previous to the great war.

* * *

Many employees of the Hood Rubber Co., Watertown, Massachusetts, who have been discharged from various branches of service, are resuming their former positions. Thus far 26 such men have returned to the tire department and 5 to the calendar room.

The Hood Rubber Co., Watertown, Massachusetts, is building a one-story extension of its warehouse, to cost about \$15,000.

* * *

The Hood Girls War Relief Club, an organization of woman workers at the Hood Rubber Co., Watertown, Mass., gave a very successful minstrel show at Symphony Hall, Boston, April 22, 1919, in which over 150 participated. This club has raised thousands of dollars for war relief work, the proceeds of its annual minstrel show being one of the chief sources of its revenue.

* * *

The Walker Webbing Co. mill in Brockton was originally one story high, measuring 56 by 200 feet. Last year an additional story was built over one-half this area, and now the company is completing two stories by building over the remaining portion. The work will cost about \$6,000, and is expected to be finished sometime this month.

* * *

As a result of the recent Americanization drive conducted by the Boston Rubber Shoe Co., Malden, Massachusetts, 22 employees took out citizenship papers.

* * *

Among the concerns which are welcoming back to their previous positions, or others equally good, the returned soldiers who were formerly in their employ, are the Tyer Rubber Co., Andover, Massachusetts, which has taken back 20 men, and the Carlisle Cord Tire Co., of the same place, which has taken back 8 men.

* * *

J. S. McClurg has become associated with the Carlisle Cord Tire Co., Inc., Andover, Massachusetts, as consulting engineer.

Gifford K. Simonds, general manager of the Simonds Manufacturing Co., Fitchburg, has been added to the board of directors of The First National Bank of Boston.

* * *

Ernest T. Gregory, formerly representative of the American International Corp., and manager of the International Banking Corp., Pekin, China, has been elected vice-president of the First National Corp. of Boston. Mr. Gregory at one time was connected with Lee, Higginson & Co., and later was a partner in the firm of Hambleton & Co., Baltimore.

THE RUBBER TRADE IN NEW JERSEY.

By our Newark correspondent.

PRODUCTS of the many Trenton rubber manufacturers, as well as some from other sections of the state, were recently on display in the museum of the New Jersey State House. The exhibition lasted two weeks and was visited by thousands of persons interested in the manufacture of rubber goods. Classes

& Rubber Co., Inc., contributed \$100. The De Laski & Thropp Tire Co. gave \$50, while John A. Lambert, treasurer and general manager of the Acme Rubber Manufacturing Co., and William H. Servis, vice-president of the Hamilton Rubber Manufacturing Co., each gave \$25. The Whitehead Brothers Rubber Co. gave \$25 towards the hero fund being raised in Trenton to entertain homecoming soldiers.

Four young Trenton men, who are well known in the rubber manufacturing industry, have gone to Mexico City, where they will become associated with the Pelzer Rubber Co. This company is the first to establish an automobile tire plant in that section of Mexico. The men are Daniel Henry, who was formerly employed as a chemist by the United & Globe Rubber Co.; John Simkins, Thomas J. O'Hara and Edward Taylor.

Weldon Roberts Rubber Co., of 18 Oliver street, Newark, will make alterations to its brick factory, to cost \$7,000.

* * *

The Empire Rubber and Tire Corp. suffered another fire loss recently when flames destroyed more than \$2,000 worth of rubber in the drying plant. The firemen had difficulty in reaching the flames and were compelled to flood the room. The blaze was confined to one structure.

The Page Edwards Tire Corp. has leased for a long term of years the store at 830 Broad street, Newark.

The Dunbar Manufacturing Co. of New York, capitalized at \$100,000, a reorganization of the Para Rubber Co. whose plant was destroyed by fire in November, 1917, will locate in the Luneppe factory building at South River, this state. The company manufactures rubber gloves and other druggists' sundries. The old Para company employed 100 hands and the new concern will employ a like number. F. M. Dayton, of New Brunswick, and A. H. DuBois, of Bayside, New York, former owners of the Para company, lost \$100,000 when the plant was destroyed by fire and explosion. They hold \$51,000 worth of stock in the new company. The company formerly conducted offices in England, France, and South American countries, and these will be opened again.

* * *

The Goodyear Tire & Rubber Co., Inc., Newark, New Jersey, a branch of the Goodyear company in Akron, Ohio, has leased a building suitable for its purpose and will move into it shortly.

The engineering department of the Empire Tire and Rubber Corp. enjoyed a get-together dinner recently at Gaertner's cafe for the object of forming an association for the discussion of engineering problems which arise in the plant. Several interesting papers were read, among them being one on the reconstruction period by F. W. Bechtel, toastmaster. M. J. Rich, electrical engineer of the plant, read a paper on "The Direct Motor versus Line-Shaft Drive." Among those present were the following members of the force: Frederick W. Bechtel, M. J. Rich, and Messrs. Graether, Hagadorn, Martin, Smith, Golden, Filipon and Ehret.

H. B. Niblette has been appointed supervisor of the tire sales division of the Thermoid Rubber Co., Trenton, New Jersey. He was formerly with The B. F. Goodrich Co., Akron, Ohio, and the Quaker City Rubber Co., Quaker City, Philadelphia.

CONNECTICUT NOTES.

The Carlisle Cord Tire Co., Inc., Andover, Massachusetts, has purchased approximately ten acres of land in Stamford, Connecticut, on which it will immediately build a new factory, 150 by



FOOTWEAR IN THE NEW JERSEY RUBBER EXHIBIT. UNITED STATES RUBBER CO. DISPLAY.

from the various schools in this section were brought to see it and had explained to them the way in which the various articles are made. Processes of manufacture were shown as well as the finished product, including tires and inner tubes, hose, boots and shoes, rubberized cloth, mechanical rubber goods, combs, rubber bands, fiber soles and rubber heels, fountain pens, etc.

In one case was shown the process of manufacturing rubber combs as made by the American Hard Rubber Co., Butler, New Jersey. Erasers and rubber bands were shown also, while in another section were the rubber heels and soles made by the Essex Rubber Co., Trenton. Other exhibitors included the Rutherford Rubber Co., Rutherford, "Rubberiset" brushes; Empire Rubber & Tire Co., Trenton, rubber bands; Mercer Rubber Co., Trenton, fruit-jar rings; G. W. Heath Co., Newark, fountain pens; the United States Rubber Co., New Brunswick, boots and shoes; Essex Rubber Co., inner tubes; Thermoid Rubber Co., Trenton, fabric clutch disks; Acme Rubber Manufacturing Co., Trenton, rubber mats; Essex Rubber Co., horse-shoe pads.

The exhibit was of special interest to tire users, as the Ajax, Delion, Acme, Thermoid, Simplex, Empire, and Globe companies exhibited tires and tubes.

An interesting exhibit was that of tire making by the United & Globe company, and of radiator hose by the Thermoid company. Gas masks were shown by the Essex Rubber Co. Supplementing the exhibit were pictures of the work as it is done in the different factories. There were samples of crude, and also washed and dried rubber.

The rubber manufacturing companies of Trenton are always willing to contribute substantially to the various Liberty Loan drives and have given liberally to the various war funds. During the drive for the relief of stricken Poland the Delion Tire

250 feet, of concrete and steel saw-tooth construction, one-story high, to take care of its increasing business.

C. N. Turner has succeeded W. I. Bullard, resigned, as assistant secretary and assistant treasurer of the Goodyear Cotton Mills, Inc., Killingly, Connecticut.

The Foremen's Club, of the Hartford Rubber Works, gave a dinner on Saturday evening, April 12, 1919, to about 200 at the Hotel Garde. The addresses by officers of the company dealt with the outlook for business prosperity following the war.

THE RUBBER TRADE IN RHODE ISLAND.

By Our Regular Correspondent.

WHILE all indications point to a continuation of business activity among the rubber manufactories of Rhode Island during the coming months, there is at present a cessation in the drive that has been experienced for many months previously. During the respite the managements of the various plants are taking advantage of the opportunity of making a general overhauling, renovation and repairing, and are preparing for another period of rushing business, especially among such plants as are making automobile tires and accessories.

Just at present additional orders appear to be slow in coming along, but with the reestablishment of normal trade conditions throughout the country, there is no doubt that the rubber business will enjoy another record-making period. General trade conditions throughout the country appear to be gradually improving. During the past month the Alice and Millville rubber mills of the Woonsocket Rubber Co. have been running five days weekly, being closed all day Saturday.

It is interesting to note that a canvass that was recently made of the business conditions in 440 large firms of the country that are members of the National Association of Manufacturers indicates that only two districts reported business as very active. These were the Attleboro-Providence district and the Detroit district. Jewelry, musical instruments, rubber and tobacco products, and vehicles, including automobiles, are the only lines of business reporting great business activity.

The entire plant of the Narragansett Rubber Co., Bristol, including factory buildings, machinery, complete manufacturing equipment and a large tract of land on Wood, Catherine, and Richmond streets, has been sold to the United States Rubber Co. This property has a taxable valuation of \$41,500. It is understood that the main buildings will be used for storage purposes in connection with the National India Rubber Co., doing away with those the company has been using in Providence for that purpose.

This rubber factory has been in existence since 1895, and was started by the late Terance McCarthy, who resided in Bristol all his life. Under his direction the factory grew from a small concern into a large factory which put out daily between 11,000 and 12,000 pairs of arctics and tennis shoes, and employed over 700 hands. When the factory first started it was known as the Byfield Rubber Co.; a few years later it was changed to the Consumers' Rubber Co., and during the last seven or eight years has been known as the Narragansett Rubber Co. Mr. McCarthy was recognized throughout the trade as a thorough rubber man and it is safe to presume that had it not been for his death the factory would have continued doing business under its own name. Practically all of the operatives from this plant have obtained employment either at the National India Rubber Co. or one of the rubber concerns in Providence.

The Goodyear Raincoat Co., 252 Westminster street, Providence, is owned by Nathan Hyman, Providence, and S. Bornstein, Portland, Maine, according to their statement filed at the City Clerk's office.

The United States Tire Co. has removed its Providence branch from 18 Snow street to the corner of Westminster and Jackson streets, where it will have two of the largest show windows in Providence, one on each street, and about 5,000 square feet of floor space, besides a large basement. Howard E. Crocker is manager.

In accordance with its policy of bringing the company's service direct to motorists, the Firestone Tire & Rubber Co., Akron, Ohio, has opened a branch at 50 Weybosset street, Providence, in charge of H. J. Aitken, who for the last two years has been attached to the Boston branch of the Firestone company.

Abraham C. Golden has filed his statement with the City Clerk of Providence that he is the sole owner of The American Tire Co., 131 Fountain street, that city; also of the National Tire Co., at the same address.

The International Rubber Co.'s plant at West Barrington, where carriage cloth is being manufactured in large quantities, is being operated at night as well as days, due to the unusual rush of orders.

Business at the factory of the Lynn Rubber Co., in Warren, where rubber heels and soles are manufactured, and which was dull for a while, is beginning to show marked improvement, and orders are increasing.

The Reliable Vulcanizing Co., 40 Aborn street, Providence, is being conducted by August, Charles and Vincent Gagliano.

PACIFIC COAST NOTES.

By Our Regular Correspondent.

FRANK R. CARROLL, district manager of The B. F. Goodrich Co. in San Francisco, has been chosen to undertake a special mission in the Orient to develop the foreign trade of the Goodrich company. Mr. Carroll is well adapted to this work as he is well acquainted with conditions in the Orient, having been with the first contingent of American troops sent to China during the Boxer rebellion. He was also in the Philippines during the Spanish American war and, later, was engaged in business in China and the Philippines. During his absence the San Francisco business will be in charge of T. Powell.



FRANK R. CARROLL.

The Tire Service Co., Limited, has been appointed distributor for Southern California, with headquarters in Los Angeles, for the products of the Pennsylvania Rubber Co. H. C. Edelman is manager. Mr. Edelman has been with the Pennsylvania Rubber Co., Omaha, Nebraska, for the past decade.

B. F. Greenstone of New York City, for the past seven years sales manager for L. Adler Bros. & Co., of Rochester, New York, has been made assistant manager to Mat Shiffner, president of the Tire Co. of California, Los Angeles.

Howell Tatum, agent for the Fisk tire in Seattle, has gone east to visit the factory and superintendent an advertising campaign to assist the dealers in his territory.

Allen & Hebard, agents for the Thermoid tire in Portland, Oregon, announce that they have taken over additional territory in southern Washington, a large part of eastern Oregon, and the

district west of Portland to the Coast. They have made considerable additions to their sales force.

E. A. Warner, chief chemist of The Miller Rubber Co., Akron, Ohio, stopped in Los Angeles on his way to the Federated Malay States to get in closer touch with the rubber plantation owners.



LEE E. CLOUGH.

The first of the Mason solid tires to reach California have arrived and have created considerable interest in the trade. Lee Clough, for 13 years connected with the solid tire department of the Firestone Tire & Rubber Co., but for the past year in charge of the tire department of the Mason Tire & Rubber Co., Akron, Ohio, has had charge of their manufacture. The C. Fred Thompson Co. received the shipment.

"The demand for retreaded tires in the East is unlimited," says Ed Harris, secretary of the Tire Construction Co., Olive, at Pico street. "Since the Government boosted this class of work it has created a demand for products which up to eight months ago were practically unknown there."

H. G. ("Ajax") Smith, branch manager of the Ajax Rubber Co., declares that the increase in business since the factory opened its branch at 1237 South Olive street, has been steady and reflects general conditions in Southern California.

James & Thomas have taken over the agency and distribution of the Braender tires and tubes for the whole of this territory.

The Pacific Rubber Co. is Pacific Coast distributor of the "Horseshoe" tires manufactured by the Racine Auto Tire Co., Racine, Wisconsin.

William Wrigley, Jr., of the Wm. Wrigley, Jr., Co., manufacturer of chewing gum, has purchased Catalina Island off the coast of California, near Los Angeles, at a cost of more than \$3,000,000. He will build himself a home there and proposes to make the island the most beautiful and most advertised spot in the United States, intending it for a family pleasure resort rather than a millionaire colony. His plans include the maintenance of the new St. Catherine Hotel, a bungalow colony, sports and fishing facilities, etc. Catalina Island is reached by boat from San Pedro, the harbor for Los Angeles, and has long been an objective point for California tourists.

Tire manufacturers have started in to capture the spring trade of southern California with an energy and determination that has never been known before in the history of the industry in this part of the country. Every big firm in the east is covering the territory with the idea of being in on the ground floor and capturing its share of the business which the end of the war has greatly stimulated. The attraction of all-the-year-round motoring has brought here many of the heads of big eastern firms, and it is believed that not only southern California, but the entire state is to see its greatest year in the history of the automobile industry. Naturally, this creates a large demand for tires and new agencies are daily being announced.

The movement in the legislature for a \$50,000,000 bond issue to be devoted to the improvement of the highways has given an impetus to every branch of the automobile trade. California now possesses excellent highways and this new development will open up thousands of acres in this state.

George Bellis, of The Goodyear Tire & Rubber Co., is introducing the single pneumatic cord truck tire and declares it has many advantages over the old style tube pneumatic. The single pneumatics, he says, are made in the same manner as the cord tires for passenger cars, except that there are more plies of cords, the side walls are sturdier and the tread much thicker. Most of the trucks of the Signal Corps operated during the war, he states, were equipped with the single pneumatic.

Henry E. Durr, president of the Victor Rubber Co., Springfield, Ohio, is in Los Angeles arranging plans for selling the Victor products through the Bershon Tire Co.

Sam S. Cori, factory representative of the Racine Rubber Co., paid a brief visit to the California territory recently, including a visit to San Diego, on which he was accompanied by F. H. Osler of Los Angeles.

Fifty representatives of tire manufacturers and dealers of Seattle recently held their first annual banquet at the Hotel Washington Annex. Addresses were made by W. D. Albright, The B. F. Goodrich Co.; F. E. Winans, United States Rubber Co., and Daniel St. George, The Goodyear Tire & Rubber Co., and G. G. Lemley, of Ballou & Wright, representing the Racine Tire & Rubber Co.

J. D. Hess, Jr., district manager of the Firestone Tire & Rubber Co., Akron, Ohio, was a recent visitor in Portland, Oregon, studying trade conditions. He paid particular attention to the "ship by truck" campaign now being launched by the Firestone company.

The Hippeli Tire Co. has located offices and salesroom in Sacramento for the distribution of Brunswick tires.

O. L. Weaver, secretary of the Star Rubber Co., Akron, Ohio, is making a business trip to the Pacific Coast.

THE GATES CLUB STIMULATES TEAM WORK.

To the Gates Club, Charles G. Gates attributes the successful upbuilding of the Gates Rubber Co., Denver, Colorado, for through it he has achieved coordinated cooperation among the entire executive and operative forces of the company, and given every employe an opportunity to win a voice in the firm's affairs.


The Gates Club is to the company what the Presidents' Cabinet is to the United States Government. It confers on all questions of policy. No new business idea is adopted by the Gates company until it has been thoroughly discussed at the regular semi-monthly meetings of the club. At nearly every session an address is made by a specialist in some line of interest to the rubber manufacturing industry, the cost of these lectures being borne by the company.

Limited to a membership of seventy-five, the Gates Club is a goal coveted by virtually every employe. It is a spur to ambition, "pep," ability, and ideas being the stepping stones to its doorway. The waiting list of eligibles is already considerably beyond the membership limit and growing daily.

The educational features of the club have attracted wide attention. This work is under direction of a committee which issues to club members a weekly bulletin containing market reports, rubber news and special articles. Employes are encouraged to take up business courses, and half of the cost of these studies is paid by the company. More than fifty men are now enrolled in different classes. When an executive position or a place of remunerative attractions is to be filled, it is to the Gates Club that the company turns for recommendations, as one of the duties of the club is to train men for these vacancies.

STRAIGHT FROM GERMANY

An advertisement originated and produced for the Victory Liberty Loan by members of the American Expeditionary Force.



For some of us
the war
will never
be over

MAYBE you'll be going to the country in a few weeks to see the green of the new leaves, and maybe, too, you've got tickets for a corking show tonight, where there will be lights and colors and gay costumes and a happy crowd.

Well — perhaps the war is over for you.

But for some of us —

Can YOU rest or work or play or live until you have finished the work we started—before the light went out?

See it through! It's a big American job. Unless you finish it up in the old American way the battles we fought over here will have been won in vain.

Victory Liberty Loan

*Le Roy B. Aldridge A.E.F.
France - 1919*



GOVERNMENT LOAN ORGANIZATION
Second Federal Reserve District
LIBERTY LOAN COMMITTEE
120 Broadway, New York

The Rubber Trade in Great Britain.

By Our Regular Correspondent.

THE raw rubber position remains without change, owing to the continuance of the blockade. Customers here know that the stock in the country is equal to nearly a year's consumption and that the East has about 80,000 tons available. It is recognized that the lifting of the blockade—which may be a fact before these lines get into print—will see a jump in rubber prices. Authoritative opinion here, however, does not anticipate a jump to more than three shillings per pound, and it is held, moreover, that it will soon fall again to a lower level. It will be interesting to see how these prognostications pan out.

NATIONAL OR WHITLEY COUNCILS.

Other topics than the price of the raw material have been much to the fore lately; these include the demands of the organized workers, not only in the rubber trade but in almost all occupations and industries, for shorter working hours coupled with no reduction of or an increase in weekly pay. The negotiations which have been going on between masters and men have resulted in an agreement for a week of 47 hours instead of the present 55 hours, and this will shortly come into force. The allocation of the hours over the week is a matter of arrangement for individual firms. In the case of a reclaiming works, where the 47-hour week was adopted in February, the whole of the time was put in the first five days, Saturday being a whole holiday. The decision as to the 47-hour week was reached at a meeting in London of the National Joint Industrial Council of the Rubber Manufacturing Industry in which the employees and other operatives are both represented. This Council is a permanent affair, having as its object "to secure the largest possible measure of joint action between employees and work people for the safeguarding and development of the rubber manufacturing industry as a part of national life, and for the improvement of the condition of all engaged in that industry. The employer's representatives are the following: P. A. Birley, Chas. Macintosh & Co., Limited; H. C. Coles, Wm. Warne & Co., Limited; E. Healey, W. & A. Bates, Limited; Sir Chas. Mandelburg, J. Mandelburg & Co., Limited; Stuart A. Russell, Silvertown Co., Limited; J. T. Goudie, chairman, Leyland & Birmingham Rubber Co., Limited; W. G. Wilson, joint secretary, India Rubber Manufacturers' Association; F. C. Baiseley, Dunlop Rubber Co., Limited; F. W. Hinde, Avon India Rubber Co., Limited; Alec Johnston, North British Rubber Co., Limited; R. H. Mallett, The Beldam Tyre Co., Limited; Hon. F. H. Hamilton Smith, The New Liverpool Rubber Co., Limited.

An important effect of these National or Whitley Councils has been to bring together the leading spirits in the same line of business and thus to foster amicable working arrangements tending to the formation of combines or rings. Britain's tendency in this direction was referred to in an editorial in the January issue of *THE INDIA RUBBER WORLD*, and the facts were not overstated. A friend of mine in a rather specialized and restricted business tells me that before the Whitley Councils came into being he knew personally only two out of his twenty-five competitors in Great Britain. Now he knows many of them, and they have formed a combine recently. Although, of course, the main ostensible reason for these trade combines is to further the general interests of the particular trades, the results as far as the consumer is concerned seem to be all in the direction of having to pay more than the mere rise in wages. Then as soon as labor recognizes that profits have increased, a demand is made for increases of pay, and so we go on.

RUBBER GOODS EMBARGO.

I do not propose to deal with the recent ministerial statement with regard to the embargo on manufactured goods, though the

matter is, of course, of great interest to rubber manufacturers on both sides of the Atlantic, though from somewhat diverse standpoints. I may say, however, that the fact of the arrangement having only six months' life has caused it to be somewhat coldly received in business circles generally, the demand being for a definite policy on which to base contracts. Meanwhile, an opportunity has arisen for Canadian rubber footwear to popularize itself in this country, though as the prolonged winter is now about over, it is not to be expected that any great demand will arise.

GOVERNMENT SCIENTIFIC WORK.

Details of scientific work carried out for Government departments in the last four years are now continually being referred to in the press, but so far we have not had anything of the nature or completeness of the article on gas defense apparatus contributed by Major Johnson to the March number of *THE INDIA RUBBER WORLD*. I feel sure that this article will be read with much interest in the rubber trade and would also be of great interest to many in other spheres of employment who are unlikely to come across it.

Among the stocks of chemicals which the Ministry of Munition is disposing of by public tender there is not much of interest to the rubber trade. Sulphur figures to a considerable extent, but it does not follow that it will be disposed of in terms which will enable rubber manufacturers to buy at pre-war prices, as the situation will continue to be dominated by freight costs and facilities from Sicily.

DUNLOP RUBBER COTTON MILLS.

The first rods of a big extension of these mills at Castleton near Manchester were cut early in March by the wives of two of the directors. The object of the extension is to afford a large increase to the productive capacities of the existing mills for the spinning and weaving of tire cloth. The expenditure involved is in the neighborhood of \$7,260,000, and it is estimated that the new mill when completed will raise the number of employees from 800 to 3,000.

THE NORTH BRITISH RUBBER CO., LIMITED.

A meeting of the Edinburgh Section of the Society of Chemical Industry was recently held at this company's works, a thorough inspection of several of the departments being made by the members under the guidance of W. A. Williams, works manager. Great interest was taken in the special laboratory—inspected on a former occasion by the writer—where balloon fabric is tested for its permeability to hydrogen. The failure under examination forms a septum in a gun-metal drum immersed in an electrically treated and controlled thermostat. Hydrogen is maintained at a certain pressure on one side of the fabric and through the other division of the aperture a uniform current of purified air is passed. The hydrogen carried over by the air is, after drying, oxidized by an electrically heated platinum spiral and weighed as water. The capacity of the installation is such that 32 tests can be carried at the same time.

A lecture entitled "The Rubber Industry—Past and Present," was given recently before the Royal Society of Arts, London, by B. D. Porritt, the chief chemist of the North British Rubber Co., Limited, and constituted an interesting and able summary of the development and progress of the industry.

THE MONARCH RUBBER CO., LIMITED.

This company is one of the latest additions to the ranks of producing works. The works are in Gleden street, Bradford Road, Manchester. George Spencer, who has been connected with the rubber trade for many years, is the governing director.

The premises are fully equipped to do all classes of proofing for waterproof garments, motor hoods, cart sheets, bench sheeting, hospital sheets, etc., and also telegraph tapes. A large output is already maintained and the company has worked overtime continually since its formation two years ago. The writer understands that a good deal of work has been done for the War Office, but at the present time the whole of the machinery is engaged on civilian work. Arrangements are now completed, it is reported, for removing the business to more commodious premises which will enable the output to be trebled.

CAMPBELL ACHNACH CO., LIMITED.

Another proofing development is the decision of this old established Glasgow firm to make extensive additions to its Thistle rubber mills at Commerce street. This fact, coupled with one or two other similar developments in the country, certainly indicates that the prevalent feeling of three or four months ago that the proofing capacity of the country has been largely overcome as a result of war demands, has been succeeded by more optimistic views of the immediate future.

CABLE MATTERS.

The Telegraph Construction & Maintenance Co., Limited, of London, has paid its customary dividend of 20 per cent for 1918, the year's results being somewhat above the average of the past few years. It is proposed to double the capital by the issue of bonus shares, making it up to £896,400.

The Cable Makers' Association has brought out a new C M A label design. This distinctive label on cables and flexible cords is a guaranty to buyers that they are getting the standard first-quality article.

In the great snowstorm in the north of England last January a very large number of overhead wires were brought down and there was a shortage of labor to make repairs. In some cases the temporary expedient was adopted of using stranded insulated cables suspended from the poles and these are still in use after three months.

The new Transport Bill, to give it its short title, which is now before the House of Commons, will have special interest for cable makers, as it proposes the electrification, on a large scale, of our main line railways. Great though this scheme is, the question of the available supply will not be so acute as in the case of the gutta percha requirement of the new Atlantic cables referred to in the March issue of the INDIA RUBBER WORLD.

DUOPRENE.

With regard to what I said in some recent correspondence about this new hydrochloride of rubber varnish, it should be mentioned that its nonflammability applies to the dried film and not to the solution in which it is sold. The solution medium is pure benzene. I understand that arrangements have been made for an exclusive selling agency in America.

PERSONAL AND TRADE NOTES.

Philip A. Birley, managing director of Chas. Macintosh & Co., Limited, has been elected vice-president of the Manchester Chamber of Commerce and will presumably in due course succeed to the presidency. Since the war the Free Trade directorate of this important chamber has been replaced by men who, in the main, are strongly identified with Protectionist principles and who are representative of a variety of manufacturers, the last president being a shipowner. These facts, it is perhaps advisable to mention, do not mean that the great cotton trade of Manchester is on the decline or that its magnates have revolted from their previous adherence to Free Trade.

The Pomona Rubber Works, Limited, of Hulme, Manchester, have been disposed of as a going concern to Messrs. Lindsay and Williams of London Road, Manchester, and Mr. Shaw, the manager, has entered the service of the latter firm.

Mr. Read, who some time ago sold the Revolite Rubber

Works, Bradford Road, Manchester, has taken premises at Heywood, near Manchester, and is reentering rubber manufacture.

At the beginning of March a party of Canadian officers paid a visit to Manchester and inspected various engineering works. They also visited the works of the Tewel and Eastern Rubber Co., Limited. At a dinner given to them in the Midland Hotel, James Tinto was in the chair and Lieutenant-Colonel Ellis, of the Canadian Engineers, spoke of the business advantages to be derived from personal acquaintance of buyer and seller. He further testified as to the high esteem in which British goods were held in Canada.

BRITISH EMBARGO ON RUBBER GOODS CONTINUES.

The prohibition upon importation of rubber manufactures is still in force in the United Kingdom, but it is understood that the ration previously allowed on the basis of 15 per cent of the 1916 imports is being continued, at least for rubber tires. According to a statement recently made in the British House of Commons, the present restrictions will not be continued beyond September 1, without a complete reconsideration of the whole subject of import restrictions. No promise is implied, however, that the restrictions will be removed by that date.

MANAGING DIRECTOR OF NORTH BRITISH RUBBER CO., LIMITED.

Alexander Johnston, J. P., general manager of the North British Rubber Co., Limited, Edinburgh and London, has been made managing director of the company. He has been, during the last 14 years, secretary, works manager, and general manager, successively, thus filling all of the principal executive positions.

AMERICAN CHAMBER OF COMMERCE HEADQUARTERS IN PARIS.

The American Chamber of Commerce in France has recently removed to new rooms at 32 rue Taibout, Paris. Its membership is now 471, of which 305 are resident, and it is hoped to add some 250 new members this year. The chamber is looking to commercial interests in the United States to avail themselves of its position for fostering their trade in France, also its conveniences afforded to their representatives while in Paris, in return for the support their membership gives.

All American citizens, corporations and associations of good standing, interested in the objects of the chamber, are eligible for active membership. The annual dues of active members, including admission fee, are \$50 for resident members, \$25 for non-resident members. Application blanks and full information may be obtained from the secretary at the above address.

MARSEILLES TO HAVE A RUBBER MARKET.

Until now France has always been content to buy both plantation and wild rubber at London, the world's market. The French Government, desirous of establishing a central market at Marseilles and in compliance with this policy have made arrangements with the Cie. Chargeurs Reunis, for regular voyages between Par  and French ports. The cost of transfer of rubber from Liverpool, amounting to 5 per cent, would then be removed. As a result, the Booth Line has cut freight rates by 20 per cent. ("Wileman's Brazilian Review.")

ITALIAN RUBBER INDUSTRY GROWS.

Pirelli & Co. of Milan have increased their capital by 3,000,000 lire. The Martiny Co. of Twin is about to double its present capital of 6,000,000 lire.

"The India-Rubber Journal" also announces that the newly formed Association of Rubber and Cable Manufacturers is composed of 14 firms, with 20,000 hands. The association's president is Senator J. B. Pirelli, and the vice-presidents are V. Tedeschi, of the Tedeschi Co., Twin, and R. Pola of the Societa Piedmontese Industria Gomma e Affini.

Rubber Planting Notes.

RUBBER EXPORTS FROM THE STRAITS SETTLEMENTS AND FEDERATED MALAY STATES.

IN 1916, the United States took 43,000 tons of crude rubber exported from the Straits Settlements; in 1917, 85,268 tons out of a total of 121,082, and in 1918, 92,454 tons out of a total of 122,004. Japan, which has been steadily increasing her imports of raw rubber, took 7,579 tons in 1918, against 3,190 tons in 1917 and 2,119 tons in 1916.

On the other hand, only 14,583 tons of crude rubber were shipped to the United Kingdom from the Straits Settlements in 1918, compared with 27,812 tons in 1917, 28,808 tons in 1916, and 27,473 tons in 1915.

The value of the rubber exports from the Straits Settlements is given, approximately, at \$94,925,337, and an idea of the falling off in prices of the product is obtained from the statistics of the Federated Malay States, which set out that the value of 78,225 tons exported in 1918 was \$65,867,220, which compared with \$107,166,638 for 79,831 tons in 1917.

The destinations of the year's shipments are given below:

FEDERATED MALAY STATES.			
	December, 1918.	Total for 1918.	Total for 1917.
Straits Settlements.....tons	5,899.46	79,000.00	66,772.82
United Kingdom.....	1,103.66	6,187.51	11,889.05
Europe.....	29.46	85.44	88.46
Ceylon.....	65.4	211.71	680.92
Other countries.....	130.54	1,130.69	469.58
Totals.....tons	7,094.56	78,225.15	79,831.37

STRAITS SETTLEMENTS.			
	December, 1918.	Total for 1918.	Total for 1917.
United Kingdom.....tons	2,021.2	14,583.9	27,812.3
United States and Canada.....	6,390.3	92,454.0	85,268.3
Europe.....	341.0	5,715.6	4,259.2
Australia.....	65.4	955.0	193.5
Ceylon.....	65.4	643.6	358.0
Japan.....	1,679.9	7,579.6	3,190.4
Other countries.....	130.5	73.2	..
Totals.....tons	10,915.5	122,004.9	121,082.0

The figures for the Straits Settlements include rubber imported into the markets of the Colony from all places, locally produced, and rubber transhipped from the Federated and non-Federated Malay States.

EXPORTS IN FEBRUARY.

A report from Kuala Lumpur states that the export of plantation rubber from the Federated Malay States for the month of February amounted to 10,809 tons. This is the largest amount ever exported in one month, and compares with 6,820 tons and 7,250 tons in the corresponding month of last year and 1917, respectively. The total for two months of the present year is 19,792 tons, compared with 14,408 tons in 1918, and 13,245 tons in 1917. Appended are the statistics for three years:

	1917.	1918.	1919.
January.....tons	5,995	7,588	7,163
February.....	7,250	6,820	10,809
Totals.....	13,245	14,408	17,972

ARRIVAL OF RUBBER CARGO AT ANTWERP.

A consignment of rubber, the first since the German occupation in 1914, arrived at Antwerp, Belgium, the latter part of March on the S. S. *Albertville*, from the Congo.

TAPPING RESULTS OF PARA RUBBER IN NIGERIA.

According to the trade supplement to the "Nigeria Gazette" of October 31, the *Hevea brasiliensis* now appears to be acclimatized in many parts of southern Nigeria, and its rate of growth compares favorably with that recorded on plantations in the East.

From 300 five-year-old trees growing in the Sapele district, which were tapped by the Agricultural Department in 1911, an average yield of one and one-half pounds of dry rubber was obtained. In the following year, four old trees at Ebrite gave an average yield of seven pounds. From September, 1916, to December, 1917, about one thousand eleven-year-old trees at Agege yielded 4,337 pounds, which was sold locally for £408 15s. 9d.

SUGAR AS A COAGULANT FOR HEVEA LATEX.

Rudolph D. Anstead, Deputy Director of Agriculture, Planting Districts, India, writing in "The Planters' Chronicle" (Bangalore, India), August 10, 1918, page 523, sums up the advantages and disadvantages of sugar as a coagulant for *Hevea* latex as follows:

The great advantage is the cheapness of the material as compared with acetic acid, especially at the present time, while, moreover, it is always available in the country and does not depend upon shipping facilities. The quantity required is very small, 0.1 to 0.2 per cent of sugar calculated on the latex, or one part of sugar to 500 parts of latex.

The disadvantages are that it produces a product which differs slightly in rate of cure from acetic-acid coagulated rubber, necessitating in the case of contracts a warning of the change to buyers. Another objection is that the coagulum is apt to be full of gas bubbles due to the evolution of carbon dioxide during the coagulation process, and sheet rubber showing this defect is regarded with disfavor in the market although the actual quality of the rubber is not affected by the presence of the bubbles. If crepe is being made the bubbles do not matter, but sheet is chiefly made now.

RUBBER TAPPING RESULTS IN UGANDA.

The following table from the "Uganda Official Gazette" of November 15, 1918, shows the results of a year's tapping on four groups of trees, and of nine months on another group in the Botanic Gardens at Entebbe.

The period was an exceptionally dry one, the total rainfall amounting to 50.11 inches during the year of tapping. Series 1, 2, and 4 were tapped for the first time, whilst series 3 and 5 were on renewed bark of four years' growth.

In series 3 the V-cut is the basal cut of the full herring-bone system, which was being practised at the time when the gardens came under the control of the Department of Agriculture, and similarly in series 5, the cuts are the two basal cuts to the left of the full herring-bone system, which had consisted of four, five or six incisions. This previous history of these two groups must be taken into account in reviewing the yields. The disparity in the number of parings per inch is noticeable. In series 5 the taper was clumsy, which accounts for the low average obtained.

The yields have been very uniform throughout, and renewal of bark is good.

Series Number.	Trees in Series.	Date Planted.	Times Tapped.	Averages.				Weight.			
				Girth at 3 Feet When Tapped.	Area of Bark Exposed in Inches.	Parings Per Inch.	Yield Per Tree, Pounds.	Sheet Rubber.		Scrap Rubber.	
								Pounds.	Ounces.	Pounds.	Ounces.
1	100	1911	159	22	9.7	16.38	1.03	89	15	14	12
2	100	1911	306	21	16.1	17	1.71	144	11	26	13
3	100	1914	306	40 1/2	19	5.27	240	12	23	0	0
4	100	1911	152	20 1/2	10.2	14.9	.59	47	11	11	7
5	100	1918	258	31 1/4	20.8	12.4	3.27	295	12	31	13

Recent Patents Relating to Rubber.

THE UNITED STATES.

ISSUED FEBRUARY 11, 1919.

- N^o. 1,293,759. Wind-shield cleaner. C. W. Groot, Rochester, N. Y.
 1,293,892. Resilient wheel. J. Kuehl, Detroit, Mich.
 1,293,893. Split demountable rim for tires. E. Oliver, Daytona, Fla.
 1,294,084. Cushion tire. M. Gomer, Mexico, Mex.
 1,294,105. Rubber glove for insulating and protecting, shaped to fit hand when in position for grasping an object. F. S. Holden, Oakland, Calif.
 1,294,108. Tire with pneumatic tube. T. J. Jameson, Florida, Calif.
 1,294,219. Folding water-bag syringe. G. S. Andrus, Akron, O.
 1,294,313. Wheel rim for pneumatic tire. J. Sloper, Devoles, Eng.
 1,294,322. Tire patch. J. T. Swint, Wrens, Ga.
 1,294,350. Pneumatic cord tire. O. Smiley, Indianapolis, Ind.

ISSUED FEBRUARY 15, 1919.

- 1,294,420. Resilient reinforced tire. B. Dahl, Minneapolis, Minn.
 1,294,421. Pneumatic tire. F. S. Dickinson, New York City.
 1,294,464. Box for tire-repair outfit, whose cover is adapted to form press with bottom of box. W. M. Holliday, Penrith, New South Wales, Australia.
 1,294,520. Fountain pen. C. B. Munn and C. H. Marker, Warren, Pa.
 1,294,632. Artificial limb with calf and foot sections having yieldable and inflatable walls. R. B. Dickson, West Point, Miss.
 1,294,649. Hose supporter. S. A. Gley, W. H. Wolpert, and C. J. Hanzel, Antigo, Wis.
 1,294,796. Reinforced rubber tire. H. L. Harding, Loughton, Eng.
 1,295,011. Compression inner tube. N. Doss, assignor to The Doss Rubber & Tube Co.—both of Atlanta, Ga.
 1,295,014. Outer cover for pneumatic tires. T. Doyens, assignor of $\frac{1}{2}$ to Rene Hustine—both of Netherlands.

ISSUED FEBRUARY 25, 1919.

- 1,295,201. Rubber heel cushion. J. Pietzuch, Cincinnati, O.
 1,295,266. Reinforced resilient tire. E. F. Bullard, Springfield, Ill.
 1,295,494. Reinforced pneumatic tire. P. L. Hedges, Mattoon, Ill.
 1,295,604. Pneumatic inner tube substitute. D. C. Roberts, Trenton, N. J.
 1,295,627. Rubber grip for bicycle handle-bars, etc. E. J. A. Sommer, Buffalo, N. Y.

REISSUES.

- 14,596. Rubber heel reinforced with embedded metal plate. E. J. Hooper, Stoughton, assignor by mesne assignments to E. W. Cary, Winchester—both in Mass.

ISSUED MARCH 4, 1919.

- 1,295,832. Waterproof container or envelope. P. H. and H. H. Allen, assignors to Bengtson & Co., Inc., all of St. Louis, Mo.
 1,295,892. Cushion heel. T. Hand, Orlando, Fla.
 1,295,961. Tire patch. G. D. Brillhart, Cuyahoga Falls, O.
 1,295,949. Tire patch. G. B. Wood, assignor of $\frac{1}{2}$ to W. C. Wood—both of Minneapolis, Minn.
 1,296,353. Pouch for tobacco, etc., having side opening with extension for clasp. "A. J. Anderson, New York City.
 1,296,359. Pneumatic mat. D. W. Brown, Youngstown, O.
 1,296,441. Armored tire. H. H. Stoner, assignor of $\frac{1}{2}$ to W. D. Stoner—both of Springfield, Mass.
 1,296,442. Elastic hose. N. E. Thompson, Newark, assignor of $\frac{1}{2}$ to L. I. Green, East Orange—both in N. J.
 1,296,512. Endless track for tractors, having removable rubber cushions. H. A. Hatfield, London—assignor to H. A. H. Tractors Limited, Birmingham—both in Eng.
 1,296,516. Tire valve. R. H. Henenier, New York City, assignor to A. Schrader's Son, Inc., Brooklyn—both in N. Y.
 1,296,517. Tire valve. R. H. Henenier, New York City, assignor to A. Schrader's Son, Inc., Brooklyn—both in N. Y.
 1,296,539. Auxiliary rim and tire for pneumatic-tired wheels. J. V. Loeffler, Evansville, Ind.

ISSUED MARCH 11, 1919.

- 1,296,668. Life-boat with inflatable floats. J. Kozioł, Des Moines, Ia.
 1,296,694. Hydromotor syringe. R. M. Pierson, Akron, O., assignor to The B. F. Goodrich Co., New York City.
 1,296,763. Sound-transmitting device. J. Cherry, Oakland, Calif.
 1,296,802. Rubber tread and heel for shoes. M. Hirschfeld, New York City.
 1,296,874. Resilient tire. J. Summerson, Emporium, Pa.
 1,296,894. Rubber sole for turn shoes. S. W. Winslow, Jr., Beverly, Mass., assignor by mesne assignments to United Shoe Machinery Corp., Paterson, N. J.
 1,296,915. Submersible toy controlled by rubber bulb. T. Burney, London, Eng.
 1,296,967. Life-saving garment with inflatable bags between layers. A. A. Kehl, assignor of $\frac{1}{2}$ to J. W. Pycha, both of Baltimore, Md.
 1,297,061. Vulcanized textile and rubber sole for boots and shoes. G. W. Beldam, Ealing, and A. U. B. Ryall, Brentford—both in Eng.
 1,297,087. Sectional pneumatic tire. C. Chandler, Kingsville, Tex.
 1,297,106. Elastic connection for garment-supporters. W. D. Corder, Philippi, W. Va.
 1,297,207. Nipple for nursing bottles.
 1,297,239. Tire-inflation valve. J. V. Potter, Ardmore, Okla.
 1,297,272. Brush with elastic scraping band on head. L. B. Strang and C. C. Pollock, Seattle, Wash.
 1,297,278. Armored inner tube. H. N. Wayne, Los Angeles, Calif., assignor to Armored Tire & Rubber Co., Wilmington, Del.
 1,297,279. Inner tube for pneumatic tires. H. N. Wayne, Los Angeles, Calif., assignor to Armored Tire & Rubber Co., Wilmington, Del.

THE DOMINION OF CANADA.

ISSUED DECEMBER 3, 1918.

- 187,740. Rubber tire with transverse elastic webs. J. W. Pepple, San Antonio, Tex., U. S. A.

ISSUED DECEMBER 10, 1918.

- 187,825. Armored pneumatic tire. A. Boerner, Scheveningen, Holland.
 187,919. Cushion tire with laminated core of sponge rubber. A. A. Crozier, London, Eng.
 187,920. Cushion tire with laminated core of sponge rubber, made in two sections, to accommodate a pneumatic tire. A. A. Crozier, London, Eng.
 187,945. Tire tread. R. A. Palmer, Edmonton, Alta.
 187,948. Spiral process of elastic and non-elastic webbing. P. J. Savage, New York City, U. S. A.

ISSUED DECEMBER 24, 1918.

- 188,029. Fountain pen with presser-bar filling device. H. L. Carman, assignor of F. Riessenberg, both of New York City, U. S. A.
 188,049. Rubber heel with leather-filled central split from inner edge covered by rubber flap. B. Church, Toronto, Ont.

ISSUED MARCH 11, 1919.

- 189,064. Demountable rim for tires. R. McClure, Fort Laramie, Wyo., and H. G. Barnes, Gilman, Mont., assignor of one-half interest—both in U. S. A.

ISSUED MARCH 18, 1919.

- 189,160. Fastener for rubber heels to be cast in the heel. A. E. Taylor, Auckland, N. Z.

ISSUED MARCH 25, 1919.

- 189,263. Fly-swatcher with cushioning bands. C. S. Hutton, Conyngham, Pa., U. S. A.
 189,297. Belt for garments. L. J. Scheuman, New York City, U. S. A.
 189,315. Nipple for nursing bottle. The Canadian Consolidated Rubber Co., Limited, Montreal, Que., assignor of A. C. Eggers, Brooklyn, N. Y., U. S. A.

ISSUED APRIL 1, 1919.

- 189,345. Hose supporter. E. Armstrong, New York City, U. S. A.
 189,359. Hard-rubber nipple with screw-threaded metallic coupling. M. V. Crocker, Newton, Mass., U. S. A.
 189,420. Resilient cushioned wheel. J. Stuart, Melbourne, Victoria, Australia.

ISSUED APRIL 8, 1919.

- 189,506. Detachable rubber heel-cover for French heels. E. S. Helwitz, New York City, U. S. A.
 189,529. Pneumatic tire. G. E. Phillips, Sarnia, Ont.

Canadian patents issued between December 31, 1918, and March 11, 1919, were listed in THE INDIA RUBBER WORLD, April 1, 1919.

THE UNITED KINGDOM.

ISSUED MARCH 5, 1919.

- 121,910. Cushioned wheel. W. Freakley, Milton House, Albion street, Hanley, and H. Aynsley, Portland House, Blyth Bridge, Stoke-on-Trent, both in Staffordshire.
 121,976. Rubber pad for crutches. D. J. Moss & Sons, Clapfield Field Works, Ardwick, Manchester, and R. C. Armstrong, 11 St. Leonard's Road, Heaton Chapel, Stockport.
 121,988. Rubber-cushioned rubber wheels with removable rubber blocks for use on soft or hard roads. W. L. Bowman, Lydiat Ash, Bromsgrove, Worcestershire.
 122,023. Tube molded from plastic rubber to constitute a single-tube tire. H. R. Wallace, 401 South 7th street, St. Louis, Mo., U. S. A.
 122,032. Collapsible car-holder for motor vehicles. J. C. Watson, 67 Westbourne Gardens, Hove, Sussex.
 122,059. Protecting cap for toes of shoes when kneeling. I. T. Dowsett, 15 Oval Road, Gravely Hill, Birmingham.
 122,067. Attachable rubber soles and heels for boots and shoes, having thin rubber sole reinforced with canvas. F. J. Wood, 3 Raw's street, Bank Parade, Burnley, Lancashire.
 122,089. Packing for stuffing-boxes. W. R. Beldam, 1a New London street, London.

ISSUED MARCH 19, 1919.

- 122,217. Metal-studded tire. A. M. Poynter, 16 Ebury street, London.
 122,301. Demountable rim for tires. J. Renwick, Emmett, Ida., U. S. A.
 122,322. Bottle stopper fitted with rubber plug. O. F. Moss, 29 King's Road, Chelsea, London.
 122,384. Soothing treat filled with sponge rubber. H. S. Briggs, 92 Toorak Road, South Yarra, Victoria, Australia.
 122,410. Corsets with elastic strips. S. J. Newman, New Haven, Conn., U. S. A.
 122,430. Inflatable life-saving suit. T. Bain and L. Morgan, 9 Ravenscourt avenue, Hammersmith, London.
 122,553. Detachable rubber tread band for tires. J. H. Gill and J. D. R. Hutch-street, Dunelm, N. Y.
 122,573. Resilient inner tube. E. J. Taylor, 9924 102d street, Edmonton, Alta.
 122,620. Surgical syringe. J. F. Larche, Laubach-Hospital, rue Am. Broise Paris, France. (Not yet accepted.)

NEW ZEALAND.

ISSUED FEBRUARY 6, 1919.

- 40,996. Resilient tire with core formed of rubber and leather disks threaded on metallic band.
 40,674. Collection device for rubber latex, etc. J. T. Hunter, 157 Featherston street, Wellington, N. Z. (Kapowas Rubber Co., Limited, 30 Moorgate street, London, Eng., assignor of W. E. Adolph, Kapowas Rubber Co., Limited, Ponianak, West Borneo.)

ISSUED MARCH 6, 1919.

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TRADE MARKS.
THE UNITED STATES.

- N** O. 14,073. The word **SALES**—Wear in heavy lettering—inner tubes for pneumatic tires. Stearns Tire & Rubber Co., St. Louis, Mo.
- 104,384. Commercial representation of the postal service and its times—rubber and fabric belting. The Postal Service & Rubber Manufacturing Co., New York City.
- 104,400. Representation of a woman's skin bearing the word **WATER**—imitation leather. People's Outfitting Co., Detroit, Mich.
- 104,401. Commercial representation of a globe with lines of latitude and longitude—rubber heels. Frank Wharton, Elyria, O.
- 112,465. The word **PERFECTION**—pneumatic cord tires. Perfection Tire & Rubber Co., Fort Madison, Ia.
- 108,375. Representation of six-pointed star with diamond superimposed, bearing the word **WELTRUM**—imitation leather for making boots and shoes. Joseph Dejond, London, Eng.
- 107,740. Representation of four T-shaped stripes arranged to form a square with broken sides and the representation of four four-leaved clover-leaves superimposed in the center, with the words **FOUR SQUARE**, underlined, beneath and between the upper two T-shaped food-jar rubbers. Friant Bros. Rubber Co., Baltimore, Md.
- 114,250. Representation of a battle oval with the word **ARMED** within the oval and two black dots beneath, between the two oval—shoes of leather, rubber, and canvas for men and women. Marshall Field & Co., Chicago, Ill.
- 114,251. The word **ECONOMY** decorated with scrolls—boot and shoe tops made of rubber, rubber composition, and fiber. Emery Heel Sales Co., Boston, Mass.
- 114,334. The representation of a flask bearing the words **ATMOS-REGLATORS**, inner-rescue apparatus, gas-masks, valves, etc. The Draeger Oxygen Apparatus Co., New York City.
- 114,487. The words **SAMMIES SURE-STRICK** in white letters against a black oblong background—tire patches. Louis H. Scott, Oklahoma, Okla.
- 114,447. Representation of label bearing the words **THE GOODYEAR**—chewing gum. The Goodyear Gum Co., Boston, Mass.
- 114,697. Representation of a brake lining having a longitudinal white stripe and enclosing the words **WHITE STRIPE** in black letters outlined in white—fabric linings for transmissions and brakes. Advance Automobile Accessories Corp., Chicago, Ill.
- 115,000. Representation of a commander's flag bearing the word **PERSHING** on the pennant—garters and hose-supporters. American Textile Products Co., Chicago, Ill.

THE DOMINION OF CANADA.

- 24,073. The word **BRAND**—rubber stamps, erasers, rubber type, etc. George Popham, Limited, Ottawa, Ont.
- 24,084. The word **CLIFFER**—tires, tire patches, inner tubes, rubber cements, paint, tape, hose guards and rolls, friction cloth, packings, tow-ropes, belting, hose, horse-shoe tools, sheeting, etc. Dunlop Tire and Rubber Goods Co., Limited, Toronto, Ont.
- 24,089. The words **WING FOOT** and the representation of a winged foot—Rubber or composition heels. The Goodyear Tire & Rubber Co. of Canada, Limited, Toronto, Ont.
- 24,273. Representation of a circle formed by a rope, enclosing the words **MINNER'S SEA LAND** and the letter **M**—footwear wholly or partially of rubber. The Minner Rubber Co., Limited, Granby, Que.
- 24,480. The word **TIRE**—corsets, elastic girdles, supporters, etc. Treo Co., Inc., New York City, U. S. A.
- 24,481. The word **PUFFY**—corsets. Uplift Corset Co., Toronto, Ont.
- 24,485. The letters **S. S. S.**—fountain pens. Asashio Hosiwayama, 1 Suchiro-cho, Kanda-ku, Tokio, Japan.

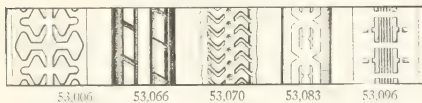
NEW ZEALAND.

- 14,710. The word **BARRELITE**—condensation products of phenol and formaldehyde. General Barrelite Co., Rector street, New York City, U. S. A.

DESIGNS.

THE UNITED STATES.

- N** O. 14,006. Non-skid tire. Patented February 18, 1919. Term 14 years. E. M. Downes, assignor to J. & D. Tire Co.—both of Charlotte, N. C.

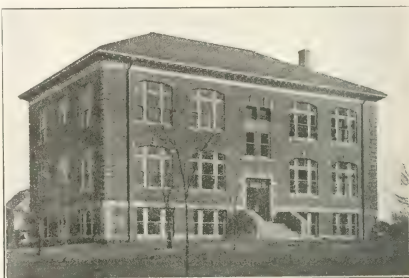


- 53,060. Rubber heel. Patented March 11, 1919. Term 14 years. I. R. Bailey, assignor to The Goodyear Tire & Rubber Co.—both of Akron, Ohio.
- 53,066. Tire casing. Patented March 11, 1919. Term 14 years. I. S. Dickinson, New York City.
- 53,070. Pneumatic tire. Patented March 11, 1919. Term 14 years. R. T. Griffiths, assignor to The Miller Rubber Co.—both of Akron, Ohio.
- 53,081. Tire. Patented March 11, 1919. Term 14 years. H. D. Mitchell, assignor to Norwalk Tire & Rubber Co.—both of Norwalk, Conn.
- 53,096. Tire. Patented March 11, 1919. Term 14 years. G. H. Witsman, assignor to The Dayton Rubber Manufacturing Co.—both of Dayton, O.

A COLLEGE COURSE IN RUBBER TECHNOLOGY.

REALIZING its advantages of location in the greatest rubber manufacturing city of the world, the Municipal University of Akron, Ohio, offers, in connection with its regular courses in chemistry, a course in the chemistry of india rubber, which is designed to prepare young men who have had a preliminary training in chemistry to enter the rubber industry with a theoretical and practical knowledge of chemistry as applied to the manufacture of rubber products.

The course at Akron is an advanced one, the minimum prerequisite requirements being at least three years of college chemistry, including general chemistry, eight credit hours, and six credit hours each of qualitative analysis, quantitative analysis, and organic chemistry. It covers a period of two semesters, starting in September of each year, and the curriculum consists



AKRON MUNICIPAL UNIVERSITY LABORATORY.

of lectures, recitations, laboratory work,* and visits to factories, of which Akron offers plenty, embracing virtually every important line of rubber manufacture.

A general outline of the work follows:

CRUDE RUBBER.—Sources (including discussion of the latex and coagulation), *washing and drying, *analysis, *chemical properties, *physical properties, structure.

COMPOUNDING INGREDIENTS.—Sources and manufacture, *analysis, *use.

VULCANIZING RUBBER.—*Analysis, *physical testing, theory of vulcanization.

RUBBER COMPOUNDING AND VULCANIZING.—Calculating costs and gravities of formulas, *compounding, *vulcanizing, *physical testing.

RUBBER RECLAIMING.—*Methods, *analysis and testing.

BALATA AND GUTTA PERCHA.—Properties and uses.

VISITS TO FACTORIES.—The topics are fully discussed in the lectures, and those indicated by stars are further developed in the laboratories, which are fully equipped to carry on the necessary chemical work and provided with modern apparatus for washing, compounding, vulcanizing, reclaiming, and testing rubber. The student thus acquires knowledge and actual experience in these processes, and in near-by factories becomes familiar with the details of various manufacturing methods impossible to conduct in the laboratory. With preparation in the technology of rubber he is placed in a position to develop into a valuable man in the laboratory, factory or sales force.

The need for such a course is well indicated by the number of situations open to skilled rubber men, while the success of the course is shown by the fact that calls for graduates are received from all parts of the United States, and that these students have been uniformly successful in holding their positions.

Review of the Crude Rubber Market.

THROUGHOUT April the prevailing feature of the crude rubber market has been general dullness. Manufacturers have been inquiring for Brazilian Pará grades. Early in the month the market for plantation grades steadily declined to lower levels, due to heavy arrivals and no demand. The price for first latex crépe reached 46½ cents with little demand and no buying interest, and the market showed firmness. About the middle of the month a little animation was introduced by the activity of large buying interests. This feature and the unsettled state due to lack of definite information from the Far East resulted in advancing first latex crépe to 50 cents. This advance was not followed by general buying on the part of manufacturers and easier conditions prevailed. The Easter holidays brought unsettled conditions with little activity and all grades generally dull.

PLANTATIONS. April 4, first latex crépe, spot, 49 cents; April arrivals, 49 cents; May to July arrivals, 48½ cents; July to December arrivals, 48¼ cents. On April 22 the prices were: First latex crépe, spot, 49 cents; May-June arrivals, 48½ cents; July-December arrivals, 48½ cents; January-December, 1920, 50½ cents.

April 4, spot ribs, 48 cents; April arrivals, 48 cents; May-July arrivals, 47½ cents. April 22, spot ribs were 48 cents; May-June arrivals, 47½ cents; July-December arrivals, 47½ cents; January-December, 1920, 40½ cents.

April 4, No. 1 amber gristly crépe was quoted at 44 to 46 cents for near-by and 43 cents for July to December arrivals. On April 20, April to June arrivals, this grade, were quoted, spot 46 cents, and July to December arrivals at 44 cents.

April 4, No. 1 roll brown crépe, spot 34 cents; May-July arrivals, 32 cents; July-December arrivals, 30 cents. April 22, No. 1, roll brown crépe, spot was 34½ cents; July-December arrivals, 30 cents.

PARÁS. April 4, upriver fine, spot, was 56 cents; islands fine, spot, 49 cents; upriver coarse, spot, 35 cents; islands coarse, spot, 22 cents; Cameté coarse, spot, 23 cents. April 20, upriver fine, spot, was 56 cents; upriver coarse, spot, 34 cents; islands fine, spot, 47 cents; islands coarse, spot, 21½ cents. Cameté coarse, spot, 22½ cents.

NEW YORK QUOTATIONS.

Following are the New York spot quotations, for one year ago, one month ago and on April 25, the current date:

	May 1, 1918.	April 1, 1919.	April 25, 1919.
PLANTATION HEVEA—			
First latex crepe.....	57 @ 50	51 @	48½ @
"Hevea crepe, extra.....	58 @	48 @	46 @
Amber crepe No. 1.....	58 @	47 @	45 @
Amber crepe No. 2.....	58 @	46 @	44 @
Amber crepe No. 3.....	58 @	45 @	43 @
Brown crepe, thick clean.....	58 @	45 @	43 @
Brown crepe, thin clean.....	58 @	40 @	43 @
Brown crepe, thin specky.....	58 @	43 @	41 @
Brown crepe, rolled.....	58 @	35 @	34 @
Smoked sheet, ribbed.....	67 @ 70	50 @	47 @
"Hevea ribbed smoked sheet.....	67 @	48 @	46 @
Smoked sheet, plain standard quality.....	66 @	48 @	46 @
"Hevea sheet, smooth smoked sheets.....	66 @	40 @	44 @
Unsmoked sheet, standard quality.....	66 @	40 @	44 @
"Hevea unsmoked sheets.....	66 @	33 @	33 @
Colombo scrap No. 1.....	66 @	20 @	20 @
Colombo scrap No. 2.....	66 @	20 @	20 @
BRAZILIAN PARÁS—			
Upriver fine.....	56 @	56 @	50½ @
Upriver medium.....	56 @	51 @	44½ @
Upriver coarse.....	56 @	34 @	34½ @
Upriver weak fine.....	56 @	44 @	43 @
Upriver weak fine.....	56 @	36 @	37½ @
Upriver caucho ball.....	37 @ 38	34½ @	44 @
Islands fine.....	57 @ 58	48 @	44 @
Islands medium.....	57 @	43 @	44 @

	May 1, 1918.	April 1, 1919.	April 25, 1919.
BRAZILIAN PARÁS—			
Islands coarse.....	57 @ 58	53 @	53 @
Cameté, coarse.....	55 @ 26	53 @	53 @
Upriver caucho ball.....	55 @	53 @	53 @
Peruvian fine.....	55 @	53 @	53 @
Tapajos fine.....	55 @	53 @	53 @
AFRICANS—			
Niger flake, prime.....	52 @	50 @	22 @
"Niger flake, extra No. 1, 28%.....	52 @	50 @	22 @
Benguella, extra No. 1, 28%.....	52 @	50 @	22 @
Congo prime, black upper.....	52 @	50 @	22 @
Congo prime, red upper.....	52 @	50 @	22 @
Rio Nunez, flake.....	52 @	50 @	22 @
Rio Nunez, sheets and strings.....	52 @	50 @	22 @
Comakys, sheets.....	52 @	50 @	22 @
Massai sheets and strings.....	52 @	50 @	22 @
CENTRAIS—			
Corinto scrap.....	41 @	33½ @ 34	33 @
Emeralda sausage.....	40 @	33½ @ 34	33 @
Central scrap.....	38 @ 39	33½ @ 34	33 @
Central scrap and strip, 75%.....	36½ @	32 @ 33½	32 @
Central wet sheet, 25%.....	23 @	23 @	23 @
Guayula, 25% guarantee.....	33 @	30 @	30 @
Guayula, dry.....	43 @	40 @	40 @
MANICOBAS—			
Cauca, rebo, loads.....	41 @	36 @	36 @
Cauca, scrap.....	35 @	26 @	26 @
Manicoba (basis 30% loss).....	30 @	34 @	34 @
Manicoba, thin sheet.....	30 @	34 @	34 @
EAST INDIAN—			
Assam crepe.....	56 @ 57	56 @	56 @
Assam crepe.....	56 @	56 @	56 @
Penang block scrap.....	37 @	39 @	39 @
BALATA—			
Block, Ciudad Bolivar.....	70 @ 71	76 @	76½ @
Colombia.....	58 @ 59	58 @	58 @
Parana.....	53 @	56 @	56 @
Straitan, sweet.....	82 @ 83	82 @	82 @
Straitan, amber.....	90 @	90 @	90 @
PONTIANAK—			
Banjoan.....	15 @ 15	15 @	14 @ 17
Pontianak.....	15 @	15 @	15 @
Satun.....	15 @	15 @	15 @
GUTTA PERCHA—			
Gutta, Siak.....	24 @	23 @	26 @
Red, Macassar.....	3.00 @	3.00 @	3.25 @

*Rubber Association of America noncontractual.
*Nonannual.

RECLAIMED RUBBER.

Continued dullness characterized the demand for reclaimed rubber during April. Consumers are not contracting and are purchasing only for immediate and special requirements which are very moderate. The reclaimers, however, take a hopeful view of the future, but in turn are not seeking to increase their stocks of rubber scrap for future operations as they consider scrap prices are too high and anticipate reductions on receipt of the coming large Spring collection soon due.

Prices of all reclaimed grades remain the same as last month.

NEW YORK QUOTATIONS.

APRIL 26, 1919.

	Standard Reclaims.	Subject to change without notice.
Flourish.....	96 @	93 @
Fracture.....	96 @	93 @
Mechanical.....	11 @	12 @
Red.....	20 @	25 @
Slime.....	14 @	15 @
Turn, black.....	12 @	12½ @
White.....	22 @	24 @

COMPARATIVE HIGH AND LOW SPOT RUBBER PRICES.

	1917.	1918.	1919.
PLANTATIONS—			
First latex crepe.....	\$0.51	\$0.51	\$0.51
Smoked sheet, standard.....	\$0.51	\$0.51	\$0.51
PARÁS—			
Upriver fine.....	56 @	56 @	50½ @
Upriver coarse.....	34 @	34 @	34½ @
Islands coarse.....	21½ @	21½ @	22 @
Cameté.....	22½ @	22½ @	28 @

*Figured only to April 24.

THE MARKET FOR COMMERCIAL PAPER.

There is a general feeling that the market has been rather tight, especially in New York, but the approach to the opening of the Victory Loan campaign, both from out of town the demand has been fair, the best rubber names going at 5½ to 5¾ per cent, and those not so well known at 6 to 6½ per cent.

EXPORTS OF PLANTATION RUBBER FROM THE FAR EAST.

	JANUARY, 1919.			
	Singapore.	Penang.	Port Swettenham.	Totals.
To United Kingdom.....	42,340.134	935,067	1,119,221	5,295,532
Samarae.....	42,340.134	.....	.....	42,340.134
United States.....	10,560,933	7,046	.....	10,573,749
New York.....	10,717,867	161,111	.....	10,878,978
Pacific ports.....	.....	42,400	.....	42,400
Canada.....	212,800	.....	.....	212,800
South America.....	64,933	.....	.....	64,933
Totals.....	32,869,067	1,191,994	1,119,721	35,180,782

(Compiled by R. F. Bradford, Penang, Straits Settlements.)

PLANTATION RUBBER EXPORTS FROM JAVA DURING 1918.

	December.		Twelve Months Ended December 30.	
	1917.	1918.	1917.	1918.
To England.....	1,639,000	808,000	2,193,000	1,659,000
United States.....	146,000	373,000	1,495,000	6,318,000
Singapore.....	30,000	378,000	81,000	1,775,000
Other countries.....	1,815,000	1,559,000	18,959,000	17,303,000
Totals.....	1,815,000	1,559,000	18,959,000	17,303,000

From Batavia..... 1,165,000
 Samarang..... 14,000
 Surabaya..... 441,000
 Other ports..... 6,000

Totals..... 1,815,000 1,559,000 18,959,000 17,303,000

EXPORTS OF INDIA RUBBER FROM PARA, MANAOS, AND IQUITOS DURING JANUARY, 1919.

EXPORTERS.	NEW YORK.					EUROPE.					GRAND TOTALS.
	Fine.	Medium.	Coarse.	Caucho.	TOTALS.	Fine.	Medium.	Coarse.	Caucho.	TOTALS.	
Stowell & Co.....	157,183	23,178	76,693	16,748	273,799	69,350	.....	8,350	12,362	89,722	363,771
J. Marques.....	154,349	47,766	105,867	40,731	348,713	12,568	.....	.....	.....	12,568	466,131
Adelbert H. Alden, Limited.....	91,145	18,828	50,752	12,285	173,010	30,090	.....	.....	.....	30,090	203,100
General Rubber Co. of Brazil.....	71,855	7,512	59,404	50,732	189,503	.....	.....	.....	.....	.....	189,503
C. F. Pinheiro & Co.....	17,510	15,741	64,958	34,200	132,379	.....	.....	.....	.....	.....	132,379
Santer, Filho & Co.....	80,013	.....	.....	80,980	160,993	.....	.....	.....	.....	.....	160,993
Chamie & Co.....	27,030	.....	30,331	54,900	112,261	.....	5,380	10,500	15,780	31,660	128,041
Itar Itar.....	6,221	.....	6,246	75,222	87,489	10,400	.....	38,992	14,686	64,078	152,567
Sundries.....	47,231	5,913	65,181	16,754	134,179	30,410	.....	10,330	30,630	71,370	264,825
Totals.....	604,506	124,731	465,704	445,626	1,700,627	315,767	.....	33,760	33,262	372,699	2,073,219
Para Manao.....	.....	.....	.....	.....	.....	400,314	10,000	.....	.....	410,314	410,314
From Iquitos.....	339,568	10,478	53,777	114,145	517,968	.....	.....	.....	.....	.....	517,968
Totals.....	1,004,154	135,209	519,481	559,771	2,218,615	715,984	10,000	33,760	33,262	783,006	3,001,621

(Compiled by Stowell & Co., Para, Brazil.)

EXPORTS OF INDIA RUBBER FROM MANAOS DURING THE MONTH OF JANUARY, 1919.

EXPORTERS.	NEW YORK.					EUROPE.					GRAND TOTALS.
	Fine.	Medium.	Coarse.	Caucho.	TOTALS.	Fine.	Medium.	Coarse.	Caucho.	TOTALS.	
F. A. Mendes & Co.....	208,000	.....	.....	.....	.....	208,000	208,000
Tancred, Porto & Co.....	158,000	.....	.....	.....	.....	158,000	158,000
F. A. Mendes & Co.....	67,692	6,560	23,670	24,930	.....	122,852	122,852
General Rubber Co. of Brazil.....	110,000	10,000	.....	.....	.....	120,000	120,000
Stowell & Co.....	15,110	1,820	4,856	10,915	31,771	52,762	52,762
Theodore Levy, Camille & Co.....	25,500	.....	.....	.....	.....	25,500	25,500
Adelbert H. Alden, Limited.....	16,000	1,060	945	1,097	19,191	29,293	29,293
B. Levy & Co.....	7,040	.....	.....	.....	.....	7,040	7,040
Oscar Ramos & Co.....	655,333	19,440	29,141	36,942	740,846	740,846	740,846
In transit, Iquitos.....	36,982	101,891	20,306	38,126	197,305	119,952	10,004	6,589	15,452	152,997	349,902
Totals.....	36,982	101,891	20,306	38,126	197,305	775,275	30,044	35,730	52,394	893,443	1,090,748

(Compiled by Stowell & Co., Manao, Brazil.)

EXPORTS OF INDIA RUBBER FROM MANAOS DURING FEBRUARY, 1919.

EXPORTERS.	NEW YORK.					EUROPE.					GRAND TOTALS.
	Fine.	Medium.	Coarse.	Caucho.	TOTALS.	Fine.	Medium.	Coarse.	Caucho.	TOTALS.	
Tancred, Porto & Co.....	261,246	87,812	167,832	83,110	600,000	59,001	90,611	320	68	250,000	850,000
F. A. Mendes & Co.....	67,512	80,207	118,328	83,254	349,301	104,000	.....	8,400	.....	112,400	461,701
Stowell & Co.....	109,068	62,647	33,116	7,038	211,869	25,500	10,200	12,480	70,735	118,915	330,784
General Rubber Co. of Brazil.....	12,938	29,046	11,910	216,000	260,994	.....	.....	.....	.....	.....	260,994
Higson & Fall.....	2,193	170	1,069	1,914	5,346	48,547	.....	2,410	2,850	53,807	59,153
Adelbert H. Alden, Limited.....	11,082	5,585	4,174	12,215	33,056	.....	.....	.....	.....	.....	33,056
T. G. Araujo.....	.....	.....	.....	.....	.....	25,802	5,120	310	.....	31,232	31,232
Totals.....	578,039	265,467	372,625	199,441	1,415,527	394,850	107,931	39,920	73,653	616,354	2,031,926
In transit, Iquitos.....	49,726	256,530	79,208	41,066	426,530	15,367	.....	.....	.....	15,367	441,897
Grand totals.....	627,765	521,997	451,833	240,507	1,842,102	410,217	107,931	39,920	73,653	631,721	2,473,823

(Compiled by Stowell & Co., Manao, Brazil.)

STRAITS SETTLEMENTS RUBBER EXPORTS.

An official cablegram from Singapore states that in the month of February 15,661 tons of rubber were exported from the Straits Settlements ports, as compared with 2,334 tons in the corresponding month last year and 6,495 tons in 1917. The total for two months of the present year is 30,065 tons against 6,636 tons in 1918 and 10,057 tons in 1917. Included in last month's exports were transshipments of 1,861 tons. Appended is the comparative table for three years:

	1917.	1918.	1919.
January.....	3,562	4,302	14,404
February.....	6,495	2,334	15,661
Totals.....	10,057	6,636	30,065

WEEKLY RUBBER REPORT.

GUTHRIE & CO., LIMITED, Singapore, report [March 13, 1919]:
 The weekly rubber auction opened yesterday rather quietly at about last week's level, but the latter part of the day saw considerably increased competition, there being several buyers in the market for early shipment. On the first day fine pale crepe and ribbed smoked sheet both touched 77 cents, showing an advance of ½-cent on the week. At the continuation of the sale today some lively bidding was witnessed, and fine pale crepe advanced to 77½ cents (one fine lot in cases sold for 78 cents) while the same figure was paid for one small lot of prime sheet. Off quality sheet and crepe met with a steady demand at prices about 2 cents up. Clean brown crepes more than maintained their previous value, while dark and black crepes weakened slightly. The quantity sold was 739 tons, out of 1210 tons cataloged.

The following was the course of values:

	In Singapore per pound.	Sterling Equivalent per Pound in London.
Sheet, fine ribbed smoked.....	73½c @ 77c	2/ 0/4 @ 2/ 1/4
Sheet, good ribbed smoked.....	66 @ 73	1/ 10/8 @ 2/ 0/4
Sheet, clean smoked.....	74 @ 77½c	1/ 17/8 @ 2/ 0/4
Crepe, fine pale.....	73 @ 77½c	2/ 0/4 @ 2/ 1/4
Crepe, good pale.....	67½ @ 73	1/ 10/8 @ 2/ 0/4
Crepe, brown.....	61 @ 65½	1/ 9 @ 1/ 10/8
Crepe, good brown.....	59½ @ 61	1/ 6/4 @ 1/ 8/4
Crepe, dark.....	43 @ 55	1/ 3/8 @ 1/ 5/8
Crepe, bark.....	37 @ 40	1/ 0 @ 1/ 1/8
Scrap, virgin and pressed.....	31 @ 31½	1/ 0/4 @ 1/ 0/4
Scrap, loose.....	.. @ @ ..

Quoted in S. S. Currency.

CRUDE RUBBER ARRIVALS AT ATLANTIC AND PACIFIC PORTS AS STATED BY SHIPS' MANIFESTS.

PARAS AT NEW YORK.

	Cases				
	Fine.	Me. dium.	Coarse.	Cau cho.	Mixed.
MARCH 15. By the S. S. <i>Josephine</i> , from Pará.	135	13			
Meyer & Brown.....	125	77	667	...	278,784
General Rubber Co.....	...	77	135	...	100,232
Gaston, Williams & Wigmore.....	44	...	189	...	115,913
G. Amsinck & Co., Inc.....	...	32	...	...	23,232
Paul Bertuch.....	...	...	1,793	...	198,853
Pol & Kelly.....	...	...	76,161	...	76,161
Various.....	46	161	705	295	591,800

MARCH 11. By the <i>Hendrik Isen</i> from Manóas.					
Hagemeyer & Brown.....	263	13	...	...	101,270
Meyer & Brown.....	83	140	8	...	83,600
Gaston, Williams & Wigmore.....	475	546	688	556	1,054,718
H. A. Aslett & Co.....	960	299	892	226	789,597
F. R. Henderson & Co.....	166	...	...	...	41,870
General Rubber Co.....	711	42	389	72	391,600
Pol & Kelly.....	657	389	252	45	466,111
Aldens' Successors, Limited.....	66	34	30	77	72,723
Various.....	...	573	66	267	287,298

APRIL 3. By the S. S. <i>Justin</i> from Manóas.					
Pol & Kelly.....	196	24	259	...	217,934
H. W. Winter.....	806	212	...	...	11,968
Various.....	806	215	1,154	699	935,220

APRIL 3. By the S. S. <i>Justin</i> from Pará.					
Pol & Kelly.....	283	56	265	97	330,587
Neuss, Hestlein & Co.....	141	28	20	...	66,088
H. A. Aslett & Co.....	...	9	59	129	70,224
Various.....	543	230	574	393	595,876
(1,903 volumes)	...	...	...	...	200,536

APRIL 3. By the S. S. <i>Justin</i> from Lquitos.					
H. A. Aslett & Co.....	...	...	...	73	30,613
W. R. Grace & Co.....	...	...	...	24	11,019
Gaston, Williams & Wigmore.....	...	...	...	...	1,859
G. Amsinck & Co., Inc.....	...	...	...	72	25,487
Various.....	...	...	...	257	109,498

APRIL 4. By the S. S. <i>Alban</i> from Lquitos.					
Neuss, Hestlein & Co.....	125	408	684	322	135,080
H. A. Aslett & Co.....	100	188	281	32	248,360
Gaston, Williams & Wigmore.....	...	3	32	60	36,146
W. R. Grace & Co.....	156	36	58	...	129,707
General Rubber Co.....	341	149	226	290	453,312
Pol & Kelly.....	...	...	...	...	34,491
F. R. Henderson & Co.....	94	...	18	5	48,604
Aldens' Successors, Limited.....	...	73	317	139	187,264
Paul & Dumont, Inc.....	39	...	40	...	14,586
Raw Products Co.....	...	...	...	...	263,843
Paul Bertuch.....	534	140	158	61	33,572
Moran & Stewart.....	591	682	277	1,208	1,117,239
Various.....	...	...	...	...	...

APRIL 11. By the S. S. <i>Alban</i> from Trinidad.					
Various.....	57	...	...	...	\$1,810

APRIL 11. By the S. S. <i>Cristobal</i> , from Cristobal.					
W. R. Grace & Co.....	623	...	...	...	14,880

APRIL 18. By the S. S. <i>Albert Paul</i> , from Pará.					
G. Amsinck & Co., Inc.....	65	...	...	...	21,485

APRIL 22. By the S. S. <i>Marcel</i> , from Trinidad.					
G. Amsinck & Co., Inc.....	62	...	...	...	20,460

ANGOSTURA.

MARCH 25. By the S. S. <i>Matana</i> , from Trinidad.					
G. Amsinck & Co., Inc.....	85	...	...	...	14,850

APRIL 18. By the S. S. <i>Marcel</i> , from Trinidad.					
G. Amsinck & Co., Inc.....	271	67,550

PLANTATIONS.

	Shipment from:	Shipped to:	Pounds.	Totals.
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MARCH 17. S. S. <i>Matana</i> , from San Francisco.				
The Goodyear Tire & Rubber Co.....	Tandjo'g Priok.....	1,420,740		
New York Overseas Co.....	Tandjo'g Priok.....	59,900		
Aldens' Successors, Ltd.....	Tandjo'g Priok.....	27,000		
L. Littlejohn & Co., Inc.....	Tandjo'g Priok.....	57,260		
J. T. Johnstone & Co.....	Tandjo'g Priok.....	180		
Inc.....	Tandjo'g Priok.....	165,780		
F. R. Henderson & Co.....	Singapore.....	11,880		
Meyer & Brown.....	Singapore.....	35,100		
E. Boissevain & Co.....	Singapore.....	242,870		
Robinson & Co.....	Singapore.....	122,220		
Edred Stern & Co.....	Singapore.....	173,440		
Gaston, Williams & Wigmore.....	Singapore.....	51,220		
Rubber Trading Co.....	Singapore.....	60,300		
Far East Importing Co.....	Singapore.....	7,300	2,435,560	
Aldens' Successors, Ltd., Soolabaya.....				

1 Bale.....	160 cases short-shipped.	400 cases short-shipped.		
120 cases short-shipped.	176 cases short-shipped.			

	Shipment from:	Shipped to:	Pounds.	Totals.
MARCH 17. S. S. <i>Matana</i> , at Halifax.				
William H. Stiles & Co., Inc.....	Liverpool	New York	9,900	
L. Littlejohn & Co., Inc.....	Liverpool	New York	141,480	
Meyer & Brown.....	Liverpool	New York	33,040	
Edward Maurer Co., Inc.....	Liverpool	New York	26,280	
Pol & Kelly.....	Liverpool	New York	187,560	
Hood Rubber Co.....	Liverpool	New York	118,620	
Various.....	Liverpool	New York	71,100	509,140

MARCH 19. S. S. <i>Tamara</i> , at Seattle.				
Edward Maurer Co., Inc.....	Singapore	Seattle	61,300	
Mittin & Co., Inc.....	Singapore	Seattle	120,780	
United Malayan Rubber Co., Limited.....	Singapore	Seattle	100,800	
L. Littlejohn & Co., Inc.....	Singapore	Seattle	808,920	
Raw Products Co.....	Singapore	Seattle	118,620	
W. R. Grace & Co.....	Singapore	Seattle	51,140	
J. T. Johnstone & Co., Inc.....	Singapore	Seattle	178,330	
Peninsular Trading Co.....	Singapore	Seattle	89,660	
Firestone Tire & Rubber Co.....	Singapore	Akron	232,640	
The Goodyear Tire & Rubber Co.....	Singapore	Akron	1,482,340	
William H. Stiles & Co., Inc.....	Singapore	New York	11,340	
General Rubber Co.....	Singapore	New York	134,400	
Meyer & Brown.....	Singapore	New York	157,860	
Hadden & Co.....	Singapore	New York	361,060	
Charles T. Wilson Co., Inc.....	Singapore	New York	580,140	
Rubber Trading Co.....	Singapore	New York	127,600	
Rembia Estates, Limited.....	Singapore	Vancouver	4,500	
Lendu Rubber Co.....	Singapore	Vancouver	8,400	
Dunlop & Rubber Goods Co.....	Singapore	Toronto	61,020	
Hood Rubber Co.....	Singapore	Waterloo	114,650	
Boston Insulated Wire & Cable Co.....	Singapore	Boston	17,460	5,123,550

MARCH 19. S. S. <i>Adolph</i> , at New York.				
Nat. E. Bergen.....	St. John	New York	2,160	2,160

MARCH 19. S. S. <i>Yehashi Maru</i> , at New York.				
Pol & Kelly.....	Colombo	New York	59,500	
L. Littlejohn & Co., Inc.....	Colombo	New York	248,040	
Edward Maurer Co., Inc.....	Colombo	New York	4,660	
Charles T. Wilson Co., Inc.....	Colombo	New York	187,920	
United States Rubber Co.....	Colombo	New York	189,090	1,178,150

MARCH 21. S. S. <i>Yehashi Maru</i> , at San Francisco.				
T. B. Ross.....	Singapore	San Francisco	54,400	
Winter, Ross & Co.....	Singapore	San Francisco	45,000	
J. T. Johnstone & Co.....	Singapore	San Francisco	46,800	
The B. F. Goodrich Co.....	Singapore	San Francisco	1,342,980	
The Goodyear Tire & Rubber Co.....	Singapore	San Francisco	1,798,550	3,287,740

MARCH 22. S. S. <i>Harold Potter</i> , at Vancouver.				
Meyer & Brown.....	Singapore	New York	87,660	
Moran & Wright.....	Singapore	Detroit	43,560	
Firestone Tire & Rubber Co.....	Singapore	Akron	405,900	537,120

MARCH 24. S. S. <i>Indra</i> , at Seattle.				
Firestone Tire & Rubber Co.....	Singapore	Akron	374,040	
L. Littlejohn & Co., Inc.....	Singapore	Seattle	21,460	
W. R. Grace & Co., Limited.....	Singapore	Seattle	43,740	472,240

MARCH 25. S. S. <i>Keishu Maru</i> , at Seattle.				
G. Kawahara & Co.....	Osaka	Seattle	171,000	
Various.....	Penang	Seattle	52,900	223,200

MARCH 26. S. S. <i>Cretic</i> , at New York.				
Aldens' Successors, Limited.....	Liverpool	New York	21,240	
Koenig Bros.....	Liverpool	New York	18,000	
The Goodyear Tire & Rubber Co.....	Liverpool	New York	62,410	
Robinson & Co.....	Liverpool	New York	37,760	136,392

MARCH 26. S. S. <i>Kawahara</i> , at Seattle.				
G. Kawahara & Co.....	Osaka	Seattle	157,300	157,300

MARCH 26. S. S. <i>Columbia</i> , at San Francisco.				
F. R. Henderson & Co.....	Penang	San Francisco	91,080	91,080

MARCH 28. S. S. <i>Taiachok</i> , at San Francisco.				
L. Littlejohn & Co., Inc.....	Socorabaya	San Francisco	138,960	
The Goodyear Tire & Rubber Co.....	Socorabaya	San Francisco	893,880	1,032,840

MARCH 28. S. S. <i>Yehashi Maru</i> , at New York.				
Charles T. Wilson Co., Inc.....	Liverpool	New York	22,680	
Pol & Kelly.....	Liverpool	New York	21,460	
Various.....	Liverpool	New York	16,740	61,380

MARCH 29. S. S. <i>Panama</i> , at New York.				
Pablo Calvet.....	Panama	New York	25,200	
Pablo Antonio Andrade.....	Panama	New York	10,800	
Andean Trading Co.....	Panama	New York	10,800	38,520

MARCH 29. S. S. <i>Bintong</i> , at San Francisco.				
L. Littlejohn & Co., Inc.....	Socorabaya	San Francisco	138,880	
Pol & Kelly.....	Socorabaya	San Francisco	62,640	

MARCH 29. S. S. <i>Yehashi Maru</i> , at New York.				
The Goodyear Tire & Rubber Co.....	Socorabaya	San Francisco	45,180	
L. Littlejohn & Co., Inc.....	Batavia	San Francisco	103,680	
The Goodyear Tire & Rubber Co.....	Batavia	San Francisco	1,881,000	2,231,880

From:	Shipped to:	Pounds.	Totals.	From:	Shipped to:	Pounds.	Totals.
MARCH 31, S. S. <i>Islandia Maru</i> , at Seattle.				APRIL 1, S. S. <i>Matloppo</i> , at New York.			
Edward Maurer Co., Inc. Singapore	New York	254,520		Various	London	858,980	858,980
William H. Stiles & Co., Singapore	New York	1,870		APRIL 1, S. S. <i>Chimra Maru</i> , at New York.			
Robinson & Co., Singapore	New York	72,740		The B. F. Goodrich & Co. Liverpool	New York	35,820	
W. G. Ryckman & Co., Singapore	New York	48,600		The Goodyear Tire & Rubber Co., Liverpool	New York	7,740	
Robber Trading Co., Singapore	New York	1,000		Winter, Ross & Co., Liverpool	New York	25,560	
F. R. Henderson & Co., Singapore	New York	355,680		Poel & Kelly, Liverpool	New York	5,760	
Mitsui & Co., Inc., Singapore	San Francisco	1,450		Charles T. Wilson Co., Inc., Liverpool	New York	4,390	79,200
Mitsui & Co., Inc., Singapore	Seattle	90,000		APRIL 2, S. S. <i>Becken</i> , at New York.			
F. R. Henderson & Co., Singapore	Seattle	647,320		Edward Maurer Co., Inc., Soerabaya	New York	67,860	
L. Littlejohn & Co., Inc., Penang	Seattle	123,400		Fred Stern & Co., Soerabaya	New York	100,800	
Edward Maurer Co., Inc., Penang	Seattle	28,080		The Goodyear Tire & Rubber Co., Soerabaya	New York	385,920	
Fred Stern & Co., Inc., Penang	Seattle	53,840		Firestone Tire & Rubber Co., Batavia	New York	277,120	
William H. Stiles & Co., Penang	New York	29,340		Meyer & Brown, Batavia	New York	97,940	
Robinson & Co., Penang	New York	3,660		I. T. Johnstone & Co., Batavia	New York	56,340	
F. R. Henderson & Co., Penang	New York	30,060		Hagemeyer & Co., Batavia	New York	6,120	
Various	Seattle	2,160	2,188,020	W. Hammesfahr & Co., Batavia	New York	151,020	
MARCH 31, S. S. <i>Islandia Maru</i> , at New York.				A. C. Fox & Co., Batavia	New York	9,540	
Robinson & Co., Colombo	New York	538,740		Winter, Son & Co., Batavia	New York	129,960	
Edward Maurer Co., Inc., Colombo	New York	241,320		Edward Maurer Co., Inc., Batavia	New York	8,820	1,354,440
William H. Stiles & Co., Colombo	New York	20,800		APRIL 3, S. S. <i>Islandia Maru</i> , at Seattle.			
Meyer & Brown, Colombo	New York	489,420		Poel & Kelly, Singapore	Seattle	61,200	61,200
General Rubber Co., Colombo	New York	879,660		L. Littlejohn & Co., Inc., Colombo	Seattle	230,580	
Gaston, Williams & Wigg, Colombo	New York	28,260		Raw Products Co., Inc., Colombo	Seattle	61,920	
J. T. Johnstone & Co., Colombo	New York	9,000		Edward Maurer Co., Inc., Colombo	Seattle	108,360	
Fred Stern & Co., Colombo	New York	246,500		Hood Rubber Co., Colombo	Seattle	67,140	
Rubber Trading Co., Colombo	New York	18,000		Poel & Kelly, Colombo	Seattle	130,140	
Adolph Peninsular Trading Co., Colombo	New York	43,720		Aldens' Successors, Limited, Colombo	Seattle	30,060	6,280,200
L. Littlejohn & Co., Inc., Colombo	New York	750,600		APRIL 3, S. S. <i>Koblan Maru</i> , at Seattle.			
Poel & Kelly, Colombo	New York	1,303,200		The United Malaysian Rubber Co., Limited, Singapore	Seattle	112,000	
M. J. Colant & Co., Colombo	New York	62,000		Mitsui & Co., Limited, Singapore	Seattle	1,913,040	
Vulcan Trading Co., Colombo	New York	50,400		Charles T. Wilson Co., Singapore	Seattle	53,100	
Various	Colombo	6,000	10,003,800	L. Littlejohn & Co., Inc., Singapore	Seattle	152,640	
MARCH 31, S. S. <i>Islandia Maru</i> , at New York.				F. R. Henderson & Co., Singapore	Seattle	78,600	
L. Littlejohn & Co., Inc., London	New York	104,940		Rubber Trading Co., Singapore	Seattle	68,400	
Robinson & Co., London	New York	77,220		Fred Stern & Co., Singapore	Seattle	7,040	
Fred Stern & Co., London	New York	105,360		E. Edward Maurer Co., Inc., Singapore	Seattle	91,120	
Various	London	1,100	1,352,020	G. A. Dow & Co., Singapore	Seattle	40,000	
MARCH 31, S. S. <i>Islandia Maru</i> , at New York.				Edward Maurer Co., Inc., Singapore	New York	225,900	
L. Littlejohn & Co., Inc., Soerabaya	New York	300,960		L. Littlejohn & Co., Inc., Singapore	New York	81,720	
Robinson & Co., Soerabaya	New York	36,180		William H. Stiles & Co., Singapore	New York	10,000	
Peninsular Trading Co., Soerabaya	New York	43,700		Robinson & Co., Singapore	New York	32,400	
Edward Maurer Co., Inc., Soerabaya	New York	10,800		F. R. Henderson & Co., Singapore	New York	302,320	
William H. Stiles & Co., Soerabaya	New York	4,860		The Goodyear Tire & Rubber Co., Singapore	Akron	987,120	4,072,131
Manhattan Rubber Manufacturing Co., Batavia	New York	39,940		APRIL 9, S. S. <i>Islandia Maru</i> , at New York.			
General Rubber Co., Batavia	New York	23,240		Winter, Son & Co., London	New York	83,160	
Firestone Tire & Rubber Co., Batavia	New York	508,500		Hood Rubber Co., London	New York	36,720	119,880
Peninsular Trading Co., Batavia	New York	64,260		APRIL 9, S. S. <i>Chimra Maru</i> , at New York.			
L. Littlejohn & Co., Inc., Batavia	New York	39,600		Various	New York	30,240	30,240
William H. Stiles & Co., Batavia	New York	3,600	1,488,600	APRIL 9, S. S. <i>Fennia</i> , at New York.			
MARCH 31, S. S. <i>Islandia Maru</i> , at New York.				The B. F. Goodrich Co., London	New York	262,260	
Poel & Kelly, London	New York	208,200		R. F. Downing, London	New York	7,200	
L. Littlejohn & Co., Inc., London	New York	1,011,060		Poel & Kelly, London	New York	113,760	
Various	London	691,380	1,997,640	Various	London	129,060	512,280
MARCH 31, S. S. <i>Shingo</i> , at New York.				APRIL 11, S. S. <i>Hijoka Maru</i> , at San Francisco.			
Oelrichs & Co., Liverpool	New York	9,360	9,360	Raw Products Co., Colombo	San Francisco	44,820	
Alfred J. S. S. <i>Chimra Maru</i> , at San Francisco	San Francisco	464,040		Aldens' Successors, Limited, Penang	San Francisco	109,800	
J. T. Johnstone & Co., Singapore	San Francisco	540,720		Aldens' Successors, Limited, Singapore	San Francisco	94,860	
Aldens' Successors, Limited, Penang	San Francisco	241,760		The B. F. Goodrich & Co., Singapore	Akron	52,780	
Edward Maurer Co., Inc., Singapore	San Francisco	48,780		Firestone Tire & Rubber Co., Singapore	Akron	67,560	
Rubber Trading Co., Inc., Singapore	San Francisco	121,500		F. R. Henderson & Co., Penang	Akron	48,600	
W. R. Grace & Co., Singapore	San Francisco	405,260		Various	San Francisco	18,000	908,160
Fred Stern & Co., Singapore	San Francisco	309,780		APRIL 11, S. S. <i>Genchi Maru</i> , at Seattle.			
Far East Importing Co., Singapore	San Francisco	24,480		Firestone Tire & Rubber Co., Singapore	Akron	76,760	
E. Boisvian & Co., Singapore	San Francisco	35,100		The Goodyear Tire & Rubber Co., Singapore	Akron	541,980	
Aldens' Successors, Limited, Penang	San Francisco	64,540		Rubber Trading Co., Singapore	Seattle	197,200	
Poel & Kelly, Penang	San Francisco	23,400		The Goodyear Tire & Rubber Co., Singapore	Seattle	28,440	
L. Littlejohn & Co., Inc., Penang	San Francisco	59,880		Firestone Tire & Rubber Co., Singapore	Seattle	1,245,780	
Rubber Co., Singapore	Akron	1,485,200		Raw Products Co., Singapore	Seattle	16,020	
Firestone Tire & Rubber Co., Singapore	Akron	1,101,600		Aldens' Successors, Limited, Singapore	Seattle	178,480	
Firestone Tire & Rubber Co., Penang	Akron	121,320		Charles T. Wilson Co., Inc., Singapore	Seattle	66,960	
Rubber Trading Co., Singapore	New York	172,620		W. R. Grace & Co., Singapore	Seattle	26,280	
L. Littlejohn & Co., Inc., Singapore	New York	609,660		Peninsular Trading Co., Singapore	Seattle	38,560	
Paul A. H. & Co., Singapore	New York	705,960		L. Littlejohn & Co., Inc., Singapore	Seattle	41,260	
Rubber Importers & Dealers, Singapore	New York	288,360		Fred Stern & Co., Singapore	Seattle	133,380	
Robinson & Co., Singapore	New York	28,280		Poel & Kelly, Singapore	Singapore	513,380	
United States Rubber Co., Singapore	New York	28,080		Aldens' Successors, Limited, Singapore	New York	2,160	
Federal Products Co., Singapore	New York	174,960		W. R. Grace & Co., Singapore	New York	1,800	
Fred Stern & Co., Singapore	New York	1,912,940		F. R. Henderson & Co., Singapore	New York	79,200	
Meyer & Brown, Singapore	New York	67,860		Meyer & Brown, Singapore	New York	79,200	
William H. Stiles & Co., Singapore	New York	90,000		L. Littlejohn & Co., Inc., Singapore	New York	107,820	
Edward Maurer Co., Inc., Penang	New York	40,500		William H. Stiles & Co., Singapore	New York	80,190	
General Rubber Co., Singapore	New York	91,800		General Rubber Co., Singapore	New York	80,190	
L. Littlejohn & Co., Inc., Penang	New York	28,440		Hadden & Co., Singapore	New York	98,820	
J. T. Johnstone & Co., Penang	New York	37,800		The Goodyear Tire & Rubber Co., Singapore	Toronto	54,180	
Winter, Ross & Co., Penang	New York	44,640		Various	Singapore	187,600	5,026,990
General Rubber Co., Singapore	New York	280,979	2,168,040				

OFFICIAL INDIA RUBBER STATISTICS FOR THE UNITED STATES.

IMPORTS OF CRUDE AND MANUFACTURED RUBBER.

	1918.		1919.	
	Pounds.	Value.	Pounds.	Value.
UNMANUFACTURED— <i>free</i> :				
India rubber:				
From United Kingdom.....	168,501	\$75,561	117,000	\$4,480
Canada.....	10,047	8,095	2,655	
Central America.....	41,269	29,887	8,271	
Mexico.....	6,944	3,900	21,774	50,307
Brazil.....	3,177,396	1,020,521	5,354,280	1,892,068
Peru.....	79,736	28,739		
Other South America.....	165,736	60,925	43,681	21,907
British East Indies.....	15,299,675	8,216,430	13,253,693	4,725,854
Dutch East Indies.....	6,316,601	3,397,655	2,973,168	980,835
Other countries.....	11,165	5,920	1,147,531	327,935
Totals.....	25,296,433	\$12,830,477	23,039,209	\$8,020,312
Belting.....	148,114	64,907	56,132	28,333
Gutta percha.....	807,005	207,506	121,101	37,138
Jelutone (Pontianak).....	946,746	51,690		
Gutta percha.....			423,567	51,777
Totals.....	1,865,865	\$343,846	600,806	\$117,348
Rubber scrap.....	993,241	68,858	397,260	29,656
Totals, unmanufactured.....	27,155,529	\$13,243,181	24,037,209	\$8,167,316
Chicle.....	469,319	223,345	876,432	\$30,646
MANUFACTURED— <i>free</i> :				
India rubber and gutta percha.....		2,047		26,688
India rubber substitutes.....		5,513	179,200	31,506

EXPORTS OF DOMESTIC MERCHANDISE.

MANUFACTURED—				
Automobile tires.....	\$1,174,437		\$1,839,619	
All other tires.....	55,890		105,503	
Scrap and odd.....	104,591	10,663	358,683	39,168
Reclaimed rubber.....	119,010	20,445	492,147	89,539
Belting, hose, and packing.....	449,543		623,636	
Rubber boots.....	163,243	561,496	11,014	33,316
Rubber shoes.....	98,689	75,255	130,513	104,217
Druggists' rubber sundries.....	95,599		88,459	
Insulated wire and cables.....	548,931		804,481	
Other rubber manufactures.....	412,572		684,233	
Totals, manufactured.....	\$3,401,931		\$4,416,171	
Fountain pens.....	9,580	7,350	16,647	14,209

EXPORTS OF FOREIGN MERCHANDISE.

UNMANUFACTURED—				
India rubber.....	1,274,560	\$703,483	191,740	\$93,009
Belata.....			51,350	31,844
Gutta percha.....			500	2,350
Rubber scrap.....	57,797	16,000		
Totals, unmanufactured.....	1,331,357	\$719,492	243,590	\$127,103
MANUFACTURED—				
India rubber.....		\$430		
Gutta percha.....		1,350		
Totals, manufactured.....	974	\$1,779		\$237
Chicle.....		716	44,000	20,000

EXPORTS OF RUBBER GOODS TO NON-CONTIGUOUS TERRITORIES OF THE UNITED STATES.

MANUFACTURED—				
To Alaska:				
Belting, hose, and packing.....	\$1,297		\$14,749	
Boots and shoes.....	1,655	3,687	2,074	6,035
Other rubber goods.....		1,947		1,200
Totals.....	\$6,931		\$22,004	
To Hawaii:				
Belting, hose, and packing.....	\$12,355		\$4,739	
Automobile tires.....	95,291		112,980	
Other tires.....	4,743		1,359	
Other rubber goods.....	15,649		11,935	
Totals.....	\$128,038		\$131,013	
To Philippine Islands:				
Belting, hose, and packing.....	\$9,225		\$34,272	
Boots and shoes.....	29,746	21,789	7,651	5,391
Tires.....	75,641		320,052	
Other rubber goods.....	10,571		63,592	
Totals.....	\$117,226		\$423,307	
To Porto Rico:				
Belting, hose, and packing.....	\$2,303		\$5,478	
Automobile tires.....	53,383		66,624	
Other tires.....	129		3,770	
Other rubber goods.....	6,249		20,253	
Totals.....	\$62,064		\$96,125	

¹Details of exports of domestic merchandise by countries during January, 1919, were given in THE INDIA RUBBER WORLD, April 1, 1919, page 402.

OFFICIAL INDIA RUBBER STATISTICS FOR THE UNITED STATES.

IMPORTS OF CRUDE AND MANUFACTURED RUBBER.

	1918.		1919.	
	Pounds.	Value.	Pounds.	Value.
UNMANUFACTURED— <i>free</i> :				
India rubber:				
From United Kingdom.....	175,467	\$56,091	117,000	\$4,480
Canada.....	347,48	11,009	2,655	
United Kingdom.....	644,188	282,660	1,093,777	\$424,470
Central America.....	27,220	15,419	899,993	456,638
Mexico.....	26,171	16,157	36,791	11,885
Peru.....	5,428,321	1,936,342	222,086	57,766
Other South America.....	5,608,098	2,937,411	1,870,353	391,455
British East Indies.....	15,494,063	8,216,430	1,771,859	391,455
Dutch East Indies.....	6,663,768	3,397,655	2,973,168	980,835
Other countries.....	16,302	6,419	1,147,531	327,935
Totals.....	29,517,076	\$14,116,611	33,506,217	\$12,059,354
Belata.....	128,151	58,631	366,859	114,870
Gutta percha.....	249,394	72,418	221,648	52,620
Jelutone (Pontianak).....	2,261,531	150,555	398,774	31,626
Gutta percha.....	332,314	26,137		
Totals.....	2,611,390	\$307,741	987,281	\$199,116
Rubber scrap.....	744,171	56,249	379,396	22,438
Totals, unmanufactured.....	30,268,467	\$14,480,651	34,872,894	\$12,280,908
Chicle.....	708,834	399,777	1,684,612	1,120,336
MANUFACTURED— <i>free</i> :				
India rubber and gutta percha.....		36,845		46,378
India rubber substitutes.....		25,206		29

EXPORTS OF DOMESTIC MERCHANDISE.

MANUFACTURED—				
Automobile tires.....	\$502,402		\$1,641,012	
All other tires.....	24,479		63,009	
Scrap and odd.....	11,168	12,147	37,843	39,168
Reclaimed rubber.....	258,001	43,650	64,248	89,539
Belting, hose, and packing.....	209,343		451,176	
Rubber boots.....	68,430	12,148	17,710	33,316
Rubber shoes.....	98,689	75,255	130,513	104,217
Druggists' rubber sundries.....	61,534		84,206	
Insulated wire and cables.....	270,361		10,830	
Other rubber manufactures.....	263,490		876,831	
Totals, manufactured.....	\$2,666,448		\$4,446,974	
Fountain pens.....	10,575	6,858	32,508	31,647

EXPORTS OF FOREIGN MERCHANDISE.

UNMANUFACTURED—				
India rubber.....	411,197	\$201,156	303,659	\$147,457
Belata.....	57,740	39,118	32,000	19,585
Gutta percha.....	8,788	2,361		
Jelutone (Pontianak).....			422	80
Gutta percha.....			10,205	2,179
Totals, unmanufactured.....	477,625	\$24,735	336,666	\$169,311
MANUFACTURED—				
India rubber.....		\$654		
Gutta percha.....		6,416		\$14
Rubber substitutes, elasticon, etc.....		10,281		
Totals, manufactured.....		\$17,635		\$14
Chicle.....			66,719	35,867

EXPORTS OF RUBBER GOODS TO NON-CONTIGUOUS TERRITORIES OF THE UNITED STATES.

MANUFACTURED—				
To Alaska:				
Belting, hose, and packing.....	\$6,372		\$9,854	
Boots and shoes.....	3,455	6,654	3,066	5,004
Other rubber goods.....		4,669		628
Totals.....	\$17,695		\$15,486	
To Hawaii:				
Belting, hose, and packing.....	\$5,338		\$8,826	
Automobile tires.....	53,383		61,789	
Other tires.....	4,743		1,354	
Other rubber goods.....	15,649		10,615	
Totals.....	\$52,289		\$111,961	
To Philippine Islands:				
Belting, hose, and packing.....	\$13,396		\$37,217	
Boots and shoes.....	15,734	17,602	24,237	18,421
Tires.....	28,030		320,052	11,841
Other goods.....	6,020		57,104	
Totals.....	\$65,248		\$321,145	
To Porto Rico:				
Belting, hose, and packing.....	\$1,869		\$3,799	
Automobile tires.....	36,773		66,567	
Other tires.....	129		2,670	
Other rubber goods.....	8,068		8,169	
Totals.....	\$52,380		\$78,659	

¹Details of exports of domestic merchandise by countries during February, 1919, are given on page 463 of this issue.

EXPORTS OF INDIA RUBBER MANUFACTURES AND INSULATED WIRE AND CABLE FROM THE UNITED STATES DURING THE MONTH OF FEBRUARY, 1919. (BY COUNTRIES.)

EXPORTED TO—	Belting, Hose and Facking Value.	Boots.		Shoes.		Druggists' Rubber Stamps Value.	Tires.		Insulated Wire and Cable. Value.	All Other Manu- factures. Value.	Totals. Value.
		Pairs.	Value.	Pairs.	Value.		Automobile Tires. Value.	All Others. Value.			
EUROPE:											
Azores and Madeira Islands.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	\$56	\$56
Belgium.....	.....	24	\$15	.....	.....	.....	\$140.6	\$8.44	.....	866	26,416
Denmark.....	.....	.....	.....	15,856	\$14,129	\$31	1,478	.....	\$4,138	12,826	20,794
France.....	\$8,846	.....	.....	28	22	299	1,136	176	10,035	201,787	346,623
Greece.....	.....	.....	.....	.....	.....	.....	1,088	.....	2,215	244	2,437
Italy.....	3,014	.....	.....	.....	.....	.....	.....	.....	13,266	.....	14,110
Netherlands.....	.....	.....	.....	.....	.....	.....	30	.....	755	.....	785
Norway.....	400	.....	.....	.....	.....	.....	26,356	.....	69,669	586	67,274
Portugal.....	.....	.....	.....	576	77	.....	1,115	.....	14,671	705	15,118
Spain.....	15	.....	.....	.....	.....	155	56,228	.....	6,504	1,649	85,003
Switzerland.....	660	.....	.....	3,400	1,869	471	47,512	.....	4,066	6,505	14,117
Turkey in Europe.....	1,017	.....	.....	.....	14,637	3,758	176,878	.....	4,100	12,947	416,864
England.....	\$2,064	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
TOTALS, EUROPE	\$66,706	24	\$15	42,474	\$31,104	\$7,734	\$406,979	\$9,950	\$237,392	\$414,624	\$1,174,506
NORTH AMERICA:											
Bermuda.....	.....	48	\$142	558	\$187	\$235	.....	.....	\$45	\$153	\$1,032
British Honduras.....	\$505	.....	.....	190	171	36	\$1,288	\$111	421	421	2,532
Canada.....	20,484	3,009	11,912	20,055	19,878	25,670	46,688	3,060	11,550	113,484	334,416
Costa Rica.....	106	.....	.....	.....	.....	.....	43	.....	.....	192	2,307
Guatemala.....	1,532	.....	.....	384	426	260	11,831	754	935	1,471	17,003
Honduras.....	1,257	.....	.....	.....	.....	.....	38	.....	1,676	269	2,455
Nicaragua.....	626	24	161	24	56	133	2,664	.....	.....	2,303	\$,585
Panama.....	7,396	48	162	3,828	4,646	825	58,984	111	6,656	2,571	67,251
Salvador.....	61,068	14	.....	.....	.....	5,047	71,836	6,148	12,050	16,832	173,609
Mexico.....	.....	81	295	547	.....	.....	.....	.....	.....	.....	.....
Monterrey, Langley, etc.....	2,928	7,474	45	28	.....	.....	.....	.....	.....	.....	.....
Newfoundland and Labrador.....	1,362	4,661	11,388	4,322	3,408	.....	.....	.....	.....	.....	.....
Bahamas.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Jamaica.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Trinidad and Tobago.....	224	.....	.....	59	54	285	7,519	.....	.....	730	9,544
Other British West Indies.....	.....	.....	.....	.....	.....	.....	471	630	7	.....	1,654
Cuba.....	25,530	36	176	35,455	33,967	7,629	166,083	11,607	53,603	50,146	341,694
Danish West Indies.....	1,176	.....	.....	20	12	.....	241	146	.....	104	2,271
Dutch West Indies.....	461	.....	.....	14	19	.....	.....	.....	.....	209	976
French West Indies.....	120	.....	.....	.....	.....	3	3,292	5,686	40	362	7,783
Haiti.....	25	.....	.....	5	.....	.....	247	4,545	.....	911	2,252
Santo Domingo.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
TOTALS, NORTH AMERICA	\$128,152	10,137	\$31,346	66,137	\$53,958	\$45,636	\$432,361	\$25,237	\$105,919	\$207,359	\$1,030,188
SOUTH AMERICA:											
Argentina.....	\$10,425	.....	.....	.....	.....	\$875	\$56,546	.....	\$27,080	\$14,667	\$109,593
Bolivia.....	170	.....	.....	.....	.....	.....	1,478	.....	.....	3,854	94
Brazil.....	49,626	.....	\$50	1,881	1,743	6,543	86,349	4,043	144,838	13,985	308,179
Chile.....	50,396	12	45	2,815	2,028	1,154	119,129	1,944	26,221	9,374	110,491
Colombia.....	332	.....	.....	270	.....	180	13,550	1,112	6,667	1,355	27,996
Ecuador.....	1,488	.....	.....	.....	.....	389	4,078	.....	869	477	7,058
British Guiana.....	982	.....	.....	.....	.....	.....	424	935	217	75	2,633
Dutch Guiana.....	23	.....	.....	.....	.....	.....	175	.....	.....	.....	.....
Peru.....	17,843	18	91	.....	.....	330	40,817	1,137	7,612	8,438	60,121
Venezuela.....	40	.....	.....	6,488	5,685	2,591	69,105	288	8,723	4,341	60,982
Venezuela.....	982	.....	.....	96	.....	54	19,588	290	2,107	1,914	25,494
TOTALS, SOUTH AMERICA	\$132,643	38	\$186	13,623	\$10,452	\$13,274	\$141,239	\$12,873	\$228,293	\$54,910	\$864,170
ASIA:											
China.....	\$12,445	.....	.....	8,946	\$11,659	\$1,334	\$6,441	\$1,631	\$9,574	\$5,189	\$48,683
Japanese China.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Ceylon.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
British India.....	16,875	4	\$16	569	275	3,493	184,664	.....	.....	19,096	217,178
Straits Settlements.....	1,987	.....	.....	39	48	130	69,103	.....	1,185	28,757	101,255
Other British East Indies.....	.....	.....	.....	.....	.....	.....	773	.....	.....	.....	6,022
Dutch East Indies.....	2,806	.....	.....	.....	.....	1,390	57,977	.....	28,195	4,971	68,141
French East Indies.....	.....	.....	.....	.....	.....	.....	118	.....	2,380	34	2,429
Hongkong.....	1,060	34	87	434	237	1,232	20,414	728	33,217	36,808	148,557
Japan.....	14,922	306	641	18,965	16,779	.....	.....	.....	.....	.....	1,663
Russia in Asia.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Siam.....	.....	.....	.....	.....	.....	.....	.....	.....	175	66	243
Turkey in Asia.....	156	.....	.....	.....	.....	.....	.....	.....	.....	.....	9,465
TOTALS, ASIA	\$50,253	337	\$724	29,541	\$32,131	\$7,589	\$331,375	\$2,604	\$102,079	\$96,293	\$623,048
OCEANIA:											
Australia.....	\$8,252	665	\$518	11,093	\$6,802	\$3,895	\$10,315	\$500	\$2,524	\$19,703	\$52,509
New Zealand.....	1,199	1,206	3,499	1,506	1,234	5,215	208,699	3,250	962	22,273	40,321
Other British Oceania.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Philippine Islands.....	27,717	95	316	24,142	18,105	6,066	111,604	6,799	26,923	56,498	248,068
TOTALS, OCEANIA	\$36,668	1,566	\$4,333	36,738	\$26,141	\$9,716	\$330,618	\$10,549	\$30,418	\$98,482	\$546,925
AFRICA:											
British West Africa.....	154	.....	.....	18	222	.....	.....	.....	.....	.....	.....
British South Africa.....	40,149	36	\$106	2,437	2,634	\$60	11,478	.....	\$6,729	4,244	68,706
British East Africa.....	.....	.....	.....	.....	.....	.....	14,822	.....	.....	891	15,713
French Africa.....	.....	.....	.....	.....	.....	.....	1,600	.....	.....	.....	1,601
Portuguese Africa.....	511	.....	.....	.....	.....	.....	.....	.....	.....	.....	511
Egypt.....	.....	.....	.....	.....	.....	175	.....	.....	.....	15	190
TOTALS, AFRICA	\$40,714	36	\$106	2,435	\$2,056	\$335	\$26,400	\$3,996	\$6,729	\$5,163	\$87,239
TOTALS	\$455,136	12,138	\$36,710	190,961	\$156,142	\$84,206	\$1,941,012	\$65,209	\$710,830	\$876,831	\$4,326,076

(Compiled by the Bureau of Foreign and Domestic Commerce, Department of Commerce, Washington, D. C.)

UNITED KINGDOM RUBBER STATISTICS.

IMPORTS.

Month Ended February 28.

	1918.		1919.	
	Pounds.	Value.	Pounds.	Value.
UNMANUFACTURED—				
Crude rubber:				
From				
Dutch East Indies.....	207,300	£25,336	766,900	£28,027
French West Africa.....	31,800	2,872	14,000	784
Gulf Coast.....	10,600	1,238	.....	.....
Other African countries.....	1,190,500	100,112	354,200	32,457
Peru.....	457,200	48,666	194,900	21,405
Brazil.....	2,179,000	269,864	2,036,900	232,552
British India.....	416,300	42,666	926,400	106,134
Straits Settlements and dependencies, including Labuan.....	1,651,100	201,013	2,899,800	307,519
Federated Malay States.....	3,098,360	370,156	2,647,400	308,953
Ceylon and dependencies.....	3,855,400	458,343	3,509,700	385,537
Other countries.....	17,300	21,851	278,500	32,386
Totals.....	13,366,000	£1,542,117	13,635,900	£1,516,074
Waste and reclaimed rubber.....	86,500	884	246,600	8,135
Totals.....	13,355,400	£1,543,001	13,872,500	£1,524,209
Gutta percha.....	2,123,700	431,713	788,300	154,753
MANUFACTURED—				
Boots and shoes, <i>gutta para</i>	6,193	£71,797	3,749	£6,592
Waterproofed clothing.....	5,443	7,380	10,456	13,213
Automobile tires and tubes.....	.....	39,855	.....	69,169
Motorcycle tires and tubes.....	.....	2,491	.....	8,303
Bicycle tires and tubes.....	.....	1,768	.....	1,680
Carriage tires and tubes.....	.....	.....	.....	498
Insulated wire.....	.....	287	.....	11
Totals.....	.....	£116,198	.....	£86,259
EXPORTS.				
UNMANUFACTURED—				
Waste and reclaimed rubber:				
To				
France.....	838,700	£27,973	300,800	£7,464
MANUFACTURED—				
Waterproofed clothing.....	.....	£38,061	.....	£67,175
Boots and shoes, <i>gutta para</i>.....	.....	7,380	.....	10,456
Insulated wire.....	.....	5,773	.....	27,389
Automobile tires and tubes.....	.....	33,287	.....	9,618
Motorcycle tires and tubes.....	.....	11,145	.....	11,181
Bicycle tires and tubes.....	.....	7,340	.....	14,048
Carriage tires and tubes.....	.....	6,192	.....	15,448
Other rubber manufactures.....	.....	11,135	.....	119,981
Totals.....	.....	£302,981	.....	£402,617

EXPORTS—COLONIAL AND FOREIGN.

UNMANUFACTURED—				
Crude rubber:				
From				
Belgium.....	.....	62,600	.....	£6,747
France.....	2,666,501	£357,937	1,906,400	209,459
Italy.....	55,300	55,515	695,300	84,220
United States.....	417,500	40,681	4,045,500	474,788
Other countries.....	2,250	6,990	527,800	72,137
Totals.....	3,412,100	£441,093	7,237,400	£777,351
Waste and reclaimed rubber.....	15,000	40	.....	.....
Totals.....	3,413,600	£441,133	7,237,400	£777,351
Gutta percha.....	16,000	28,630	15,900	3,672
MANUFACTURED—				
Boots and shoes, <i>gutta para</i>	245	£3,845	.....	.....
Waterproofed clothing.....	.....	1,864	.....	£5,174
Insulated wire.....	.....	65	.....	9,595
Automobile tires and tubes.....	.....	2,490	.....	8,303
Motorcycle tires and tubes.....	.....	1,768	.....	1,680
Bicycle tires and tubes.....	.....	646	.....	120
Carriage tires and tubes.....	.....	48	.....	172
Totals.....	.....	£7,800	.....	£14,624

LONDON AND LIVERPOOL RUBBER STATISTICS.

IMPORTS.

March.

	1918.		1919.	
	Pounds.	Value.	Pounds.	Value.
UNMANUFACTURED				
Crude rubber:				
At London.....	1,673,900	£17,550	14,099,700	£1,475,200
At Liverpool.....	4,029,600	407,835	7,568,200	869,207
Totals.....	5,703,500	£698,415	22,007,900	£2,344,510
Waste and reclaimed rubber.....	.....	.....	.....	.....
At London.....	4,600	£52	37,300	£625
At Liverpool.....	7,960	96	39,800	1,400
Totals.....	12,560	£148	77,100	£2,025
EXPORTS.				
Waste and reclaimed rubber.....	.....	.....	.....	.....
At London.....	.....	£13,478	.....	.....
At Liverpool.....	.....	4,484	.....	.....
Totals.....	.....	£17,962	.....	.....

REEXPORTS.

Crude rubber:				
From London.....	2,757,000	£337,261	10,837,600	£1,113,107
Liverpool.....	1,192,000	164,241	3,129,200	343,364
Totals.....	3,949,000	£501,502	13,966,800	£1,456,471
Waste and reclaimed rubber:				
From London.....	.....	.....	2,100	£90
Liverpool.....	.....	.....	.....	£90
Totals.....	.....	.....	.....	£90

RUBBER IMPORTS AND EXPORTS FOR BRAZIL.

IMPORTS.

	1916.	1917.
MANUFACTURED—		
Automobile tires and inner tubes.....	\$759,408	\$886,648
From United States.....	427,821	633,309
France.....	56,350	84,202
Great Britain.....	75,628	59,494
Italy.....	198,680	101,834
Solid tires for motor trucks.....	121,972	102,842
From		
United States.....	70,228	52,928
France.....	4,883	1,188
Great Britain.....	46,157	48,725
Rubber goods, n. e. c.....	53,331	445,224
From United States.....	270,237	225,218
Great Britain.....	88,405	83,104
France.....	102,690	67,626
Rubber in sheets.....	34,660	91,965
Rubber toys.....	37,562	30,874
Rubber in tubes.....	183,063	219,743
Rubber shoes.....	46,516	55,462

EXPORTS.

	1916.		1917.	
	Tons.	Value.	Tons.	Value.
UNMANUFACTURED—				
Crude rubber.....	31,495	\$36,537,475	33,979	\$35,997,356
To United States.....	19,965	22,337,668	21,517	21,109,589
Great Britain.....	10,799	12,910,741	11,439	13,896,522
France.....	646	594,741	605	561,710

THE MARKET FOR RUBBER SCRAP.

NEW YORK.

THE stagnant condition of the trade in rubber scrap still continues as the result of the depressing influences that have been operative for weeks past. Reclaimers are not buying for lack of orders, as consumers prefer to use crude rubber while the difference in price is so small. The trade, however, evidently believes that the market will soon develop signs of improvement. There is some interest in inner tubes, due to export inquiries. In general, the market is very quiet, in fact, it has been described as not existing.

BOOTS AND SHOES. There has been no demand, and 7½ cents is the delivered price.

INNER TUBES. There has been slight activity in inner tubes. Prices are unchanged at 20 to 24 cents.

MECHANICALS. Very little demand, and prices nominal.

TIRES. The demand is very slight, at about 3½ cents.

NEW YORK QUOTATIONS FOR CARLOAD LOTS DELIVERED.

April 25, 1919.

Prices subject to change without notice.

BOOTS AND SHOES:				
Artic boots.....	.....	.....	.....	.....
Boots and shoes, <i>gutta para</i>.....	.....	.....	.....	.....
Trimmings.....	.....	.....	.....	.....
Untrimmed articles.....	.....	.....	.....	.....
HARD RUBBER:				
Battery jars, <i>Dark</i>.....	.....	.....	.....	.....
No. 1, bought fraction.....	.....	.....	.....	.....
INNER TUBES:				
No. 1, old packing.....	.....	.....	.....	.....
No. 2, new packing.....	.....	.....	.....	.....
No. 1.....	.....	.....	.....	.....
Red.....	.....	.....	.....	.....
MECHANICALS:				
Black scrap, mixed, No. 1.....	.....	.....	.....	.....
Can springs.....	.....	.....	.....	.....
Hacks.....	.....	.....	.....	.....
Horsehold pads.....	.....	.....	.....	.....
Hess, air-brake.....	.....	.....	.....	.....
Fire, cotton-lined.....	.....	.....	.....	.....
Insulated wire stripping, free from fiber.....	.....	.....	.....	.....
Mattings.....	.....	.....	.....	.....
Packing.....	.....	.....	.....	.....
Red scrap, No. 1.....	.....	.....	.....	.....
No. 2.....	.....	.....	.....	.....
White scrap, No. 1.....	.....	.....	.....	.....
No. 2.....	.....	.....	.....	.....

Twelve	55 @	72
Plaid 60 x 48	16 @	22
26 x 44	13 1/2 @	
Rego	13 1/2 @	
Staining print 60 x 48	36 1/2 @	.43
64 x 60	14 @	
	15 1/2 @	

IMPORTED WOOLEN FABRICS SPECIALLY PREPARED FOR RUBBERIZING

—PLAIN AND FANCIES:

36-inch, 3 1/2 to 7 1/2 ounces	1.15 @	3.15
36-inch, 2 1/2 to 5 ounces	.70 @	1.80

IMPORTED PLAID LINING (UNION AND COTTON):

63-inch, 2 to 4 ounces	.85 @	1.75
36-inch, 3 to 5 ounces	.50 @	1.00

DOMESTIC WORSTED FABRICS:

36-inch, 4 1/2 to 8 ounces	.55 @	1.15
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DOMESTIC WOVEN PLAID LININGS (COTTON):

36-inch, 3 1/2 to 5 ounces	.17 @	.30
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SHEETINGS:

JACKET:

Tulwara	.23 @	
Schurball	.26 @	

SILKS:

Canton, 38-inch	.35 @	
Schurball, 36-inch	.52 1/2 @	

TIRE FABRICS:

17 1/2-ounce Sea Island, combed	1.40 @	
17 1/2-ounce Egyptian, combed	1.25 @	
17 1/2-ounce Egyptian, marked	1.20 @	
17 1/2-ounce Pilers, combed	1.08 @	
17 1/2-ounce Pilers, carded	.85 @	

*Nominal.

SEA ISLAND CROP MOVEMENT.

First Arrivals 1, 1918, to March 28, 1919.

	Receipts	
	1918-19.	1917-18.
Stock on hand, August 1, 1918—		
Savannah, 15247; Charleston, 517.....	15,764	1,044
Received at Savannah (transit).....	12,616	23,550
Received at Charleston.....	9,065	6,885
Received at Jacksonville.....	10,593	1,819
Received at Brunswick.....	.....	.....
Received at Norfolk.....	.....	.....
Total.....	48,466	53,298
Less exports.....	27,742	37,144
Stock March 28, 1919—		
Savannah, 4661; Charleston, 3141.....	11,234	16,154
Crop in sight at all ports to date.....	32,672	52,084

EXPORTS.

	To					Burned.	Totals.
	Great Britain.	Continent.	North Mills.	South Mills.			
From—							
Savannah.....	160	15,153	778	366	19,780		
Charleston.....	182	6,587	.....	.....	6,869		
Jacksonville.....	.....	10,593	.....	.....	10,593		
Brunswick.....	.....	.....	.....	.....	.....
Norfolk.....	.....	.....	.....	.....	.....
Total.....	505	160	35,433	778	366	37,242	
1917-18.....	78	142	34,567	842	15	37,144	
Increase.....	427	418	586	736	351	398	

(Compiled by J. J. South & Co., Savannah, Georgia.)

EGYPTIAN COTTON CROP MOVEMENT.

FROM AUGUST 1, 1918, TO FEBRUARY 26, 1919.

	1918-1919.			1917-1918.		
	bales	175,878	140,882	155,783		
To Liverpool.....	78,641	85,544	106,190		
Marseilles.....	5,537	44,302	.....	
Other United Kingdom ports.....	260,056	260,428	261,973		
Total shipments to Great Britain.....		
To France.....	41,531	13,283	25,195		
Spain.....		
Italy.....		
Switzerland.....	42,910	26,001	37,128		
Norway.....		
Sweden.....		
Russia.....	3,713	500	65		
Greece.....		
Total shipments to Continent.....	88,154	39,784	84,231		
To United States.....	20,377	22,543	105,215		
India.....	10,534	12,464	9,203		
Japan.....		
Total shipments to all parts.....	379,021	335,219	460,624		
Total crop (interior gross weight), cantar.....	6,815,841	5,126,199			

1 A cantar equals 98 pounds.

(Compiled by Dumas, Benoit & Co.)

THE MARKET FOR CHEMICALS AND COMPOUNDING INGREDIENTS.

NEW YORK.

THE markets for the base metals, pig lead and spelter have been characterized the past month by equally quiet and dull conditions. About the middle of the month there was a reduction of one-quarter of a cent per pound in pig lead without appreciably influencing the demand.

ANILINE. There has been a good steady call for aniline throughout the past month at 23 to 24 cents per pound.

DRY COLORS. The prolonged dullness in dry colors shows some indications at present of early improvement, although the demand is still rather quiet.

BARYTES. There have been no price changes for barytes, and sales continue to be light.

BENZOL. The month began with a weak market, which strengthened toward the close, culminating in an active call for the material at firm prices.

CARBON TETRACHLORIDE. The demand has continued weak as through March and the price quiet and unchanged.

LITHOPONE. The price reduction of 1/2 cent per pound, dating early in the month, stimulated the demand to a very satisfactory condition. The reduced price is 6 1/2 cents.

LITHARGE AND SUBLIMED LEAD.—The market on all lead products has remained dull for the past weeks. Litharge stands at 9 1/2 to 10 cents, and sublimed lead at 8 1/2 to 9 1/2 cents.

WHITING.—There has been no change in prices, and none is expected until the cost of ocean freights from England lessens.

ZINC OXIDE. Prices for the second quarter were announced the first of April, and show a marked reduction in most grades. A decided improvement followed on the setting of the new prices and there is now a good demand, particularly in the lead-free grades.

NEW YORK QUOTATIONS.

APRIL 25, 1919.

Prices subject to change without notice.

ACCELERATORS, ORGANIC.

Accelerator N. C. C.....	lb.	.50 @
Accelerator.....	lb.	3.70 @
Accelerator.....	lb.	.55 @
Allylhyd. ammonia crystals.....	lb.	1.00 @
Aniline oil.....	lb.	.24 @
Exceller.....	lb.	.85 @
Hexamethylene tetramine (powdered).....	lb.	1.05 @
Paraldehyde.....	lb.	.35 @
Tensolite.....	lb.	.50 @
Thiocarbamide.....	lb.	.50 @
Velocite.....	lb.	.60 @

ACCELERATORS, INORGANIC.

Lead, dry red (bbls.).....	lb.	10 1/2 @
sublimed blue (bbls.).....	lb.	.08 1/2 @
sublimed white (bbls.).....	lb.	.08 1/2 @
white, basic carbonate (bbls.).....	lb.	.09 @
Lead, flour.....	lb.	.27 @
Lime, heat.....	lb.	.01 1/2 @
Litharge, domestic.....	lb.	.09 1/2 @
imported.....	lb.	.12 @
sublimed.....	lb.	.10 @
Magnesium, carbonate.....	lb.	.12 @
calcined heavy (Thistle).....	lb.	.11 @
light (Manhattan).....	lb.	.30 @
Magnesium oxide, extra light.....	lb.	.70 @
medium light.....	lb.	.30 @
Magnesite, calcined, powdered.....	ton	50.00 @ 65.00

ACIDS.

Acetic, 28 per cent (bbls.).....	lb.	.03 1/2 @
Cresylic (97% straw color).....	gal.	1.02 @
95% distill.....	gal.	.97 @
Glacial, 99 per cent (carbonyl).....	lb.	.14 1/2 @
Muriatic, 20 degrees.....	cent.	1.60 @
Nitric, 36 degrees.....	cent.	.05 1/2 @
Sulphuric, 66 degrees.....	ton	16.00 @ 20.00

ALKALIES.

Caustic soda, 76 per cent (bbls.).....	lb.	.05 1/2 @
Soda ash (bbls.).....	lb.	.04 @

COLORS.

Black:

Bone, powdered.....	lb.	.05 @
granulated.....	lb.	.09 @
Carbon, black (sacks, factory).....	lb.	.15 @

Drop	lb.	0.51	@	.15
Ivory black	lb.	.16	@	.30
Lampblack	lb.	.15	@	.15
Oil soluble anthrac	lb.	.30	@	.30
Rubber black	lb.	.07	@	.07

Blues:				
Colloid	lb.	.5	@	.50
Prussian	lb.	.70	@	.60
Chromatium	lb.	.18	@	.40

Browns:				
Siena, Italian, raw and heated	lb.	.27	@	.15
Spanish	lb.	1.00	@	1.00
Umber, Turkey, raw and heated	lb.	.05	@	.05
Vanadine	lb.	.03	@	.03

Greens:				
Chrome, light	lb.	.5	@	.50
medium	lb.	.41	@	.70
dark	lb.	.65	@	.60
commercial	lb.	.06	@	.15
Oxide of chromium (casks)	lb.	.2	@	.2

Reds:				
Antimony, crimson, sulphuret (casks)	lb.	.50	@	.50
crimson, "Mephisto" (casks)	lb.	.55	@	.55
Antimony, golden sulphuret (casks)	lb.	.25	@	.25
golden, "Mephisto" (casks)	lb.	.28	@	.28
golden sulphuret (States)	lb.	.25	@	.25
red sulphuret (States)	lb.	.25	@	.25
vermillion sulphuret	lb.	.35	@	.35
Arsenic, red sulphide	lb.	.20	@	.20
Indian, pure bright	lb.	.09	@	.09
Iron oxide, reduced grades	lb.	.12	@	.12
pure bright	lb.	.16	@	.16
Oil soluble, annealed, red	lb.	.15	@	.15
orange	lb.	.18	@	.18
Vermillion	lb.	.03	@	.03
Vermillion, English, pale, medium, dark	lb.	.11	@	.11

Whites:				
Aluminum bronze, C. P. (casks)	lb.	.5	@	.50
Aluminum, imported	lb.	.1	@	.1
Lithopone, supported	lb.	None		
domestic	lb.	.06 1/2	@	.06 1/2
Penolith (casks, factory)	lb.	.06 3/4	@	.07
(less carloads, factory)	lb.	.07 1/2	@	.07 1/2
Rubber-makers' white	lb.	.02	@	.02
Zinc oxide, horsehead (less carload, factory):				
"XX red"	lb.	.10 1/2	@	.10 1/2
"Spectra"	lb.	.10 1/2	@	.10 1/2
French process, red seal	lb.	.10 1/2	@	.10 1/2
green seal	lb.	.10 1/2	@	.10 1/2
white seal	lb.	.10 1/2	@	.10 1/2
(States)	lb.	.10 1/2	@	.10 1/2
Azo, ZZZ, lead free (less carload factory)	lb.	.09 1/2	@	.09 1/2
ZZ, under 5% leaded (less carload factory)	lb.	.09 1/2	@	.09 1/2
Z, 8% leaded (less carload factory)	lb.	.09 1/2	@	.09 1/2
Zinc sulphide	lb.	.07	@	.07 1/2

Yellow:				
Cadmium, sulphide, yellow, light, orange	lb.	.100	@	.60
red	lb.	.185	@	.60
Chrome, light and medium	lb.	.6	@	.60
Ochre, light or dark	lb.	.03	@	.60
Oil soluble aniline	lb.	.10	@	.60
Zinc chromate	lb.	.55	@	.60

COMPOUNDING INGREDIENTS.

Aluminum flake (bbls. factory)	lb.	10.00	@	3.00
Aluminum oxide (bbls. factory)	lb.	10.00	@	5.00
Ammonia carbonate, powdered	lb.	.11	@	.14 1/2
Asbestos (bags)	lb.	22.50	@	.00
Asbestos (bags)	lb.	35.00	@	.00
Barium carbonate, precipitated	lb.	.07	@	.00
Barites, pure white	lb.	.07	@	.00
off color	lb.	23.00	@	25.00
uniform floated	lb.	33.00	@	35.00
Bismuth	lb.	11.50	@	.01
Blanc fixe	lb.	.01	@	.01
Black ash	lb.	.01	@	.01
Chalk, precipitated, extra light	lb.	.05	@	.01
precipitated, heavy	lb.	.05	@	.01
China clay, domestic	lb.	.15	@	.20
Coal, imported	lb.	.18	@	.25
Coal, native	lb.	.18	@	.25
Coal linters, clean mill run, f. o. b.	lb.	.06	@	.00
Fossil flour (powdered)	lb.	.06	@	.00
(bbls.)	lb.	.06	@	.00
Glass, high grade	lb.	.05	@	.10
medium	lb.	.05	@	.10
low grade	lb.	.05	@	.10
Gypsum, flake (compound bbls.)	lb.	.10	@	.25
ground	lb.	.10	@	.25
Ground glass F. (bbls.)	lb.	.10	@	.25
Infusorial earth (powdered)	lb.	.05	@	.00
Mica, powdered	lb.	.07 1/2	@	.05
Plaster of Paris	lb.	.10	@	.100
Pumice stone, powdered (bbls.)	lb.	.10	@	.10
Rotten stone, powdered	lb.	.10	@	.10
Rob K Gd	lb.	.10	@	.10
Silica (silica)	lb.	.10	@	.10
Soapstone, powdered, domestic	lb.	.10	@	.10
Starch, powdered corn (carload, bbls.)	lb.	.10	@	.10
Talc, American	lb.	.10	@	.10
French	lb.	.10	@	.10

Tripoli earth, powdered	lb.	.01 1/2	@	.00
Tripe lvs.	lb.	.80	@	.00
Whiting, Alba (carloads)	lb.	.80	@	.90
commercial	lb.	.125	@	.00
colloid	lb.	.15	@	.00
Paris, white, American	lb.	1.50	@	1.75
English clifstone	lb.	.175	@	2.00
Wood pulp, imported	lb.	.035	@	.00
Wood flour, American	lb.	.0115	@	.00

MINERAL RUBBER.

Calsonite	lb.	47.50	@	\$7.50
Carsonite (casks, factory)	lb.	\$5.00	@	.00
M. R. (less carloads, factory)	lb.	.65	@	.00
M. R. X	lb.	100.00	@	.00
Liquid rubber	lb.	50.00	@	.00
Pioneer, carload, factory	lb.	50.00	@	.00
Rehmann	lb.	50.00	@	.00
No. 64	lb.	45.00	@	.00
318/350 M. P. hydrocarbon	lb.	50.00	@	\$5.00
Refined Esterite	lb.	175.00	@	.00
Raven M. R.	lb.	45.00	@	.00
Rubron (carloads, factory)	lb.	50.00	@	.00
(less car, factory)	lb.	60.00	@	.00
Walpole rubber flux (factory)	lb.	.15	@	.00

OILS.

Castor, No. 1, U. S. P.	lb.	.24	@	.00
No. 2, U. S. P.	lb.	.24	@	.00
Corn, crude (bbls.)	lb.	.18	@	.00
Cotton, refined (bbls.)	lb.	.18	@	.00
Glycerine (98 per cent)	lb.	.10	@	.17
Glycerine	lb.	.15	@	.00
Linseed, raw (carloads)	lb.	1.52	@	.00
Linseed compound	lb.	.87	@	.00
Palm (Niger)	lb.	.18	@	.00
Peanut	lb.	.18	@	.00
Petroleum	lb.	.06 1/2	@	.00
Petroleum, refined	lb.	.05 1/2	@	.00
Pine, steam distilled	lb.	.15	@	.65
Rapeseed, refined	lb.	1.50	@	.00
blown	lb.	1.60	@	.00
Rosin	lb.	.16	@	.00
Soya, bean	lb.	.16	@	.00
Tar, commercial (casks)	lb.	.14	@	.00

RESINS AND BITUMENS.

Castella gum	lb.	.00	@	.00
Pine tar, retort	lb.	11.00	@	.00
kin	lb.	13.00	@	.00
Pitch, Burgundy	lb.	.07	@	.00
coal tar	lb.	.01	@	.00
time tar	lb.	.04	@	.00
points	lb.	.14	@	.00
Rosin, Fontainebleau, refined	lb.	None		
fused	lb.	None		
Rosin, K.	lb.	15.00	@	.00
powdered	lb.	.17	@	.00
Shellac, fine orange	lb.	.12	@	.58
tin	lb.	12.50	@	.00
retort	lb.	13.50	@	.00

SOLVENTS.

Acetone (98% per cent denatured)	lb.	.16	@	.00
ethyl	lb.	1.10	@	.00
Benzol, water white	lb.	.25	@	.27
Naphtha, refined	lb.	1.00	@	1.10
Carbon bisulphide (drums)	lb.	.06 1/2	@	.00
trichloride (drums)	lb.	.15 1/2	@	.00
Naphtha, motor gasoline (steel bbls.)	lb.	.24	@	.00
73 or 76 degrees (steel bbls.)	lb.	None		
68 or 70 degrees (steel bbls.)	lb.	None		
V. M. & P. (steel bbls.)	lb.	.20	@	.00
Trichloro	lb.	.25	@	.35
Trichloro, spirits	lb.	.06	@	.60
Osman	lb.	.30	@	.45
Nelol, pure	lb.	.40	@	.45
commercial	lb.	.38	@	.45

SUBSTITUTES.

Black	lb.	.10	@	.18
White	lb.	.17	@	.23
Brown	lb.	.15	@	.21
Brown, factory	lb.	.07	@	.23
White, factory	lb.	.17	@	.23
White, soft	lb.	.17	@	.23
White, hard	lb.	.16	@	.23

VULCANIZING INGREDIENTS.

Lead, black hyposulphite (Black H)	lb.	.15	@	.00
Orange mineral, domestic	lb.	.15	@	.00
Sulphur chloride (drums)	lb.	.40	@	.07
Sulphur, floor, Brazilian hand	lb.	2.95	@	.00
pure soft (carloads)	lb.	.90	@	.00
superfine (carloads, factory)	lb.	2.50	@	.00

(See also Colors-Antimony)

WAXES.

Wax, beeswax, white	lb.	.10	@	.17
beeswax, white	lb.	.10	@	.17
beeswax, white	lb.	.10	@	.17
beeswax, white	lb.	.10	@	.17
beeswax, white	lb.	.10	@	.17
beeswax, white	lb.	.10	@	.17
beeswax, white	lb.	.10	@	.17
beeswax, white	lb.	.10	@	.17
beeswax, white	lb.	.10	@	.17
beeswax, white	lb.	.10	@	.17

*Nominally



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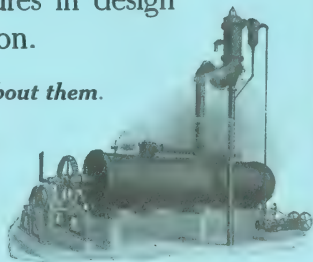


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TABLE OF CONTENTS ON LAST PAGE OF READING.**RUBBER MANUFACTURERS' OPINIONS.**

THE RESULTS of a canvass of the membership of the National Association of Manufacturers—4,400 large firms engaged in practically every line of industry—with respect to business conditions and probabilities have just been compiled and individual opinions quoted regarding what is needed to promote general prosperity. Five out of 22 principal groups of industries throughout the United States are all that agree that business activity is more than between 25 and 50 per cent of normal. One of these is the rubber industry.

The five divisions of industry reporting a predominating condition of present business prosperity are the jewelry and silverware, musical instruments and vehicle groups (the last mentioned including automobile manufacture), rubber and tobacco. With the exception of these five, the manufacturers in general do not view the trade probabilities for the balance of 1919 as very bright. The views of the rubber manufacturers are here presented. On present trade conditions 19 per cent of rubber men report them poor; 19 per cent report fair; 42 per cent, good; and 20 per cent, excellent. Of the trade prospects for 1919, 5 per cent

of the rubber men report them poor; 15 per cent report fair; 57 per cent, good, and 23 per cent find them excellent.

Conditions of manufactured stocks on hand with retailers (or jobbers) compared with normal pre-war supply:

Rubber and manufacturers report: low, 52 per cent; normal, 32 per cent; and over, 16 per cent.

Are consumers and retailers (or jobbers) buying on any important scale? Rubber manufacturers report: 54 per cent, yes; 46 per cent, no.

Are domestic markets of more immediate attraction than foreign?

Of rubber manufacturers, 76 report that they are, 24 per cent that they are not.

One hundred per cent of rubber manufacturers are recorded as opposed to government ownership of public utilities. On the question of private ownership under government regulation 75 per cent of rubber manufacturers report that they favor it, and 25 per cent are against it.

On the question "Do manufacturers favor legalized (Federal statute) fixed resale prices on trade-marked articles?" 48 per cent of rubber manufacturers favor it and 52 per cent are against it.

On the question of a referendum on the proposed legally vested National Labor Board to adjudicate disputes, 76 per cent of rubber dealers and manufacturers favor it while 24 per cent are against it.

Ninety three per cent of rubber dealers and manufacturers report themselves in favor of the repeal of the La Follette Seamen's Law and 7 per cent are against it.

The question "Should statutory responsibility be imposed on trade unions?" shows that but one per cent of the rubber industry is against it, while 99 per cent declare in favor of it.

THE COMING INDUSTRIAL CONGRESS.

IMMEDIATELY after the return of President Wilson from Paris, an industrial congress to bring about an amicable program between capital, labor and the Government for the readjustment of industry is to be called. About 100 persons will be invited to the conference, which will include some of the biggest employers of labor such as Charles M. Schwab, John D. Rockefeller, Jr., Henry Ford, and J. Ogden Armour, with labor representatives such as Samuel Gompers, W. D. Mahon, John Fitzpatrick, and Austin B. Garretson. Men and women from other walks of life, former President Taft, Justices Brandeis and Holmes, Archbishop Hayes, Professor Ripley of Harvard and others are also expected. Such a conference should be able to do much to improve industrial conditions and agree upon a course which will result in a good accord between labor and capital. It is understood the con-

gress will reaffirm the authority of the War Labor Board as a cooperative tribunal of justice until the conference conclusions are put in effect. The congress may be held in either New York or Chicago and its proceedings will be viewed with the greatest interest, particularly if President Wilson brings back from his extended stay in Europe some timely suggestions regarding the best methods of meeting the changed conditions in the industrial world.

RESULTS OF GOVERNMENT OWNERSHIP.

AUSTRALIA'S experiments with government-owned factories will be regarded with interest in the United States which has a number of government-owned factories of its own. That Mecca of the labor agitator, the Antipodes, which has tried every experiment that offered any novelty savoring of confiscation or paternalism, has of course gone deeply into government ownership and the report of the United States commercial attaché at Melbourne is therefore interesting.

Since 1912, Australia has owned and operated a clothing, cordite, harness and saddlery, woolen fabrics and small arms factories. An acetate of lime plant is being added, which will be subsidiary to the cordite factory. The total output of the factories since their establishment has been \$13,997,225, while the total cost of operating has been \$13,786,075, which includes depreciation of plant and buildings and interest on a capital investment amounting to \$2,392,950. A royal commission which investigated the operation of these factories congratulated the defense department upon the efficiency of their work.

There is, however, another side not generally known. The labor unionists of Australia are distinctly in the saddle, as witness the defeat of conscription during the war. William Hughes, the commonwealth prime minister, has already been repudiated by the labor-union party because he believed in conscription. The Union party is just now frankly syndicalistic and boldly expresses its admiration for the Bolshevistic government of Russia. The one great tenet of this party just now is repudiation of the public debt. Taxation is top-heavy, and the commonwealth Parliament exacts an income tax graduated from \$500 a year up, while the state also exacts 28 cents on every \$4.80 above \$800 a year. All government enterprises are financed with money generally borrowed from Great Britain, sometimes at 5½ per cent interest. The mortgage on the future is growing day by day, and the plan of the Union party to solve it is by repudiation.

Private enterprise in Australia and cooperative citizenship enterprises are practically nil. During the war the laborites deliberately followed a "go slow" policy. The capacity of a man in the shipyards was

98 rivets a day, and the average 73. A machine could set 600, but the employers dared not install them for fear of a strike. Strikes are frequent for every cause and no cause. Of course there is a compulsory arbitration system and the members of the arbitration board are kept working over time. There are hundreds of thousands of acres awaiting development in Australia and but 5,000,000 people. The opportunity for well-directed capital is abundant, but with the present government it is hardly likely to go there. Americans who advocate government ownership and the rule of labor should ponder Australia's plight before urging their own country to embark upon this same calamitous career.

HOMES FOR EMPLOYEES.

"THE NATION is short of homes." "Stimulate the revival of private building." "Start a local 'Own Your Own Home' Campaign."

This is the gist of most timely advice given to the governors and mayors at the recent Washington conference by Ernest T. Trigg, president of the National Federation of Construction Industries, as the most logical and sound way of stimulating business and absorbing labor. The campaign has been promulgated by the United States Department of Labor and it is urged upon manufacturers and the heads of great industrial establishments as a means of hastening the return of normal peace conditions and general prosperity.

It was pointed out that "home owning to-day pays the same ratio of that type of returns that it did before the war, and that every home that is built immediately stimulates business locally, and creates the demand for materials and products in more than a hundred correlated industries." Mr. Trigg's division is prepared to furnish definite plans of organization, suggestions for a publicity campaign, and if occasion demands, send an expert to a community to advise.

Rubber manufacturers have already done much in this line and will doubtless do more.

"WILL WE BOYCOTT GERMANY?" IS ASKED AND answered by magazine writers of many sorts. Actually the answer is, "We have." Not officially, of course, but individually, quietly and determinedly. As a sign of this, note in the erstwhile American-German restaurants, frankfurters are now Liberty sausages; in the department stores rubber toys "Made in Germany" are no longer displayed, but are relegated to the "unsalable" section. This will not continue forever, nor should it; that is up to the Germans themselves. Instead of smug self-satisfaction, continued propaganda, and hypocritical expressions of esteem for us and ours, they should face the music, acknowledge their crimes, repent and make full restitution.

Growing Cotton for Tire Fabrics.



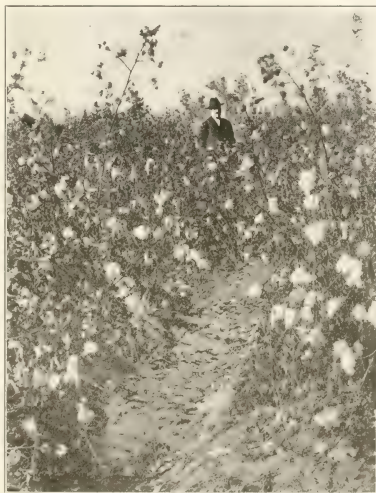
COTTON READY FOR SHIPMENT IN SAN JOAQUIN VALLEY

ARIZONA'S cotton-planting challenge issued seven years ago when a few far-sighted men started the bolls a-growing, has been echoed by California, where the industry has progressed far beyond the infant stage. The characteristic energy and enterprise of the westerner have overcome all obstacles and the returns have been phenomenal in some cases and gratifying in all.

In the Salt River valley in Arizona 34,000 bales of cotton were produced in 1918, valued at \$12,000,000, while 85,000 acres have been planted for the 1919 crop. Not only are the farmers assured of golden returns for their labors, but the quality of the product is of the very highest. The eastern markets are awakening to the fact that American Egyptian cotton compares favorably with either the genuine Egyptian Sakellarides or Sea Island. It is said that the yield of Sea Island is steadily decreasing, the total amount estimated for this year being but 40,000 bales on an acreage of a quarter of a million. The boll weevil is said to be the chief cause of the falling off.

The cotton planters of Arizona point with pride to the fact that there is a distinct increase in the length of the staple this season as the result of careful seed selection under government inspection. Ninety-eight per cent of the crop grown shows a length of fiber of 1½ inches or better with 81 per cent showing 1-11/16 inches or better. The quality of Arizona Pima cotton has been demonstrated in the manufacture of tire fabrics and a constantly increasing demand is predicted. It is further declared that government tests in the air-

craft program developed the fact that the Pima variety is exceptionally desirable for use in fine fabrics, owing to its comparatively small waste, high quality, uniformity of run and unusual length of fiber. As to the prices brought it is interesting to note that recently an equivalent grade of old-world Egyptian cotton sold at Providence, Rhode Island, at 60 cents.



LONG-STAPLE COTTON FIELD IN SALT RIVER VALLEY.

A little concerning the history of the successful Arizona experiment is worthy of note. Although in the early 'seventies Judge C. H. Gray brought some cotton seed from Georgia and tried it out in Phoenix, where it was regarded as more or less of a curiosity, it was not until 1910 that an actual beginning was made with the Pima variety. This was developed at the experimental farm at Sacaton by the United States Department of Agriculture. This new variety was produced at an average of 1½ inches in staple length, and was raised in commercial quantities in 1912, when some 280 bales were put on the market; in 1913 there were 2,200 bales; in 1914, 6,187 bales; in 1915, 1,095 bales; in 1916, 3,331 bales, and in 1917, 15,966 bales.

The industry is now far past the experimental stage and is progressing toward its flood tide. The Pima variety has now almost entirely superseded the original Yuma. It is carefully segregated throughout its growing and ginning to avoid contamination by inferior grades, thus furnishing pure, select seed, from which the record crop for this year is expected. The war for a time laid a heavy hand on the cotton industry, bringing to the front the inferior grades; this handicap no longer exists and new fields are being planted everywhere.

The average yield of cotton in Arizona has been about half a bale to the acre but some farmers recently have done much better, it is said. It has been demonstrated that new lands are not as good for cotton as the older lands on which there has been



ARIZONA LONG-STAPLE COTTON.

alfalfa or Bermuda. Overirrigation has been responsible for more poor yields than lack of water. Rotation of crops has been found to be efficacious in increasing the yield, preferably every three years, when alfalfa is produced. There have been serious delays in the ginning, caused by lack of machinery, ordered but not received in time. Some of the gins have been doubled in capacity and have been kept working at top speed. The picking for this year was about completed in March, according to the latest figures from Phoenix.

While cotton is most valuable for its use in staple manufactured goods, its utility in by-products is worthy of attention. After having gone through the gin, and a certain percentage has been disposed of for seed and the remainder crushed for oil, its mission in life is by no means ended. From the seed are obtained linters, hulls and the meats or kernels proper. The linter is merely the layer of short lint which thoroughly covers the seed pod. It may be used for upholstery, absorbent cotton, felt, cellulose, twine, gun-cotton, writing paper, varnishes, etc. The hulls are used in bran, fertilizer, fuel, packing material, fiber, stuffing for horse collars, bases for explosives and pressed paper products.

The usefulness of the meats or kernels of the cotton seed naturally exceeds that of the linters and the hulls. Two products are made from the kernels, cake or meal and crude oil. The first product finds its usefulness in dyestuffs, fertilizers, flours and in an unusually well-balanced feed for cattle and other stock. The crude oil goes through several refining processes, yielding oils of various qualities, many of which are useful as foods. The so-called foots, produced from the crude oil, are used in washing powders, soaps, glycerine, candle pitch, composition roofing, linoleums, insulating material, oilcloth, waterproofing, artificial leather and phonograph records.

California claims to be far ahead of Arizona in acreage and general expectations. It is declared that the following figures show what is to be expected from California: Imperial valley, 142,000 acres; San Joaquin valley, 35,000 acres; Palo Verde valley, 23,000 acres; Bard district, 1,000 acres; miscellaneous areas, 1,000 acres. The farmers of the San Joaquin valley are especially enthusiastic over the outlook this year and are planning to increase their acreage greatly. There is some conflict of opinion in this district as to the best varieties to plant, it is said. Efforts to exclude by legislation all varieties of cotton except Pima or Yuma Egyptian strains have not been entirely successful. Some growers who preferred the short staple have made a successful effort to have their way. It is said the first experiment in raising cotton in the San Joaquin was made 35 years ago. There was a considerable acreage also in the early 'eighties when a large force of men was employed to gather it. A strike over some minor matter took place, and the superintendent, a man of choleric disposition, rather than yield or compromise with the strikers, set the field on fire, thus ending for the time being what might have developed into a big industry.

Favorable factors in prognosticating returns from cotton raising this year are: (1) decrease in cotton production as a whole, both in the United States and elsewhere in the last few years; (2) increase in the number of cotton spindles in the United States and England; (3) new uses for cotton and cottonseed products.

Limiting factors in normal cotton consumption are (1) time needed to restore the wrecked mills of Belgium and France, and to reorganize the cotton-spinning industries of Germany and Austria; and (2) time for the impoverished peoples of Europe to recover their normal buying power. Prices, because of the fact that cotton is a basic commodity, probably will not be lowered appreciably except in proportion to labor and living costs.

The estimate of the Department of Agriculture is a carry-over of 3,000,000 bales, about as much as there was last year. The growers express the greatest faith in the recuperative powers of mankind and declare that the world will actually need more than the United States will have to sell this year.

PIMA COTTON IN ARIZONA.

Edward F. Parker, vice-president of the Southwest Cotton Co., Phoenix, Arizona, states that there will be about 350,000 acres under cultivation in the Salt River valley this year. Of this total about 80,000 acres will be in Pima cotton, some 10,000 acres belonging to the Southwest company.

It has been found impractical to grow this grade of cotton on all of the irrigated land of this valley because some of the land is not suited to the crop. In order to compete successfully with Egypt and other sources of cotton of similar quality, it is desirable to rotate with alfalfa and keep the land in the best possible condition so that it will yield to maximum capacity. It costs no more, and often less, to grow a large crop on a small acreage than to grow a small crop on a large acreage. The real profit is in the yield which is in excess of the average.

Mr. Parker has recently been made president of the Salt River Valley Hotel Co., Phoenix, Arizona, which is planning the erection of a handsome tourist hotel to be called "The Arizona." Associated with him in the enterprise are a number of important business men in Phoenix.

REDMANOL.

Redmanol is a synthetic resin or amber made of phenol and anhydrous hexamethylene-tetramine, possessing unusually high dielectric strength, exceptional heat-resisting qualities, brilliancy and luster, and great chemical inertness. With the proper fillers it withstands a temperature of 500 degrees F. in the air, and 650 degrees F. in live steam or boiling oil, without changing its shape or characteristics of chemical inertness. It may be used in making the type of articles known as condensation products.

Echoes of The Great War.

EXCISE TAXES ON RUBBER GOODS.

UNDER the last War Revenue Act passed by Congress and approved February 24, 1919, the following excise taxes on rubber manufacturers are now in effect. They apply to articles sold or leased by the manufacturer, producer or importer, the tax specified being a percentage of the price for which so sold or leased:

Automobile trucks and automobile wagons (including tires, inner tubes, parts and accessories therefor, sold on or in connection therewith or with the sale thereof), 3 per centum.

Other automobiles and motorcycles (including tires, inner tubes, parts, and accessories therefor, sold on or in connection therewith or with the sale thereof), except tractors, 5 per centum.

Tires, inner tubes, parts or accessories, for any of the articles enumerated above, sold to any person other than a manufacturer or producer of any of the articles enumerated above, 5 per centum.

Baseball protectors, foot-balls, tennis, golf and lacrosse balls, 10 per centum.

Chewing gum, 3 per centum.

THE VICTORY LIBERTY LOAN.

According to the final official figures, subscriptions to the Victory Liberty Loan amounted to \$5,249,908,000, an oversubscription of \$749,908,300, or 16.66 per cent over the quota of \$4,500,000,000. The work lagged somewhat during the early days of the drive, but there was never any real doubt that the American people would respond generously to "finish the job right." Up to the last day only 85.54 per cent of the total had been tabulated, yet the last-day avalanche from coast to coast swept the country over the top, with colors flying, and Treasury officials had prophesied that the final figures would go very close to \$6,000,000,000. Only \$4,500,000,000 will be accepted, however. New York district totaled \$1,762,684,900, exceeding by \$112,684,900 the estimate of the managers that it would exceed its quota by \$200,000,000, and most of the other great cities of the country went over the top.

THE DRIVE IN GREATER NEW YORK.

Committees representing the various branches of the rubber industry in Greater New York solicited the trade with thoroughness and enthusiasm, and a total of \$5, 911,500 was subscribed by the various divisions of the Central Committee as follows:

Crude rubber.	\$1,171,600
Tires	2,188,650
Boots and shoes	734,100
Medical rubber goods..	101,700
Mechanical rubber goods	1,161,050
Reclaimed rubber	55,000
Hard rubber.	354,700
Publicity	11,200
Brooklyn direct	133,550
	\$5,911,550

The Crude Rubber and Publicity Divisions are to be especially congratulated for the fact that they went over the top by about 65 and 60 per cent, respectively.

THE RESULT IN MASSACHUSETTS.

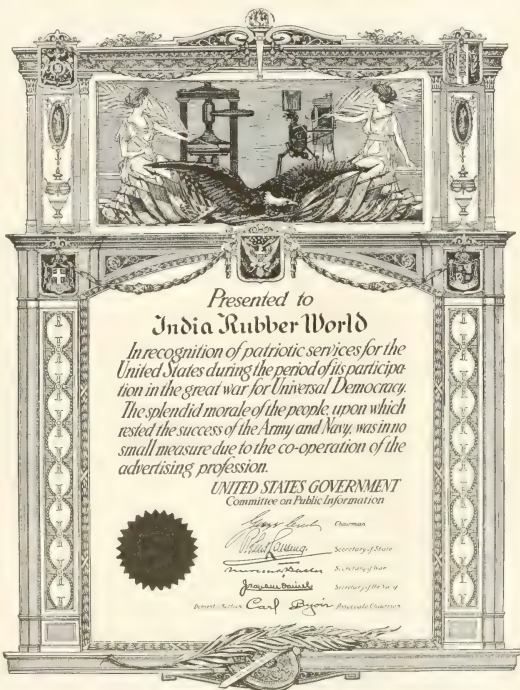
In Massachusetts 65 rubber firms and their employees subscribed \$2,648,075 and returns have not yet been received from many important concerns. Most of the larger companies reached their quota and some exceeded it.

The enthusiasm of the employees of The Fisk Rubber Co., Chicopee Falls, was particularly notable.

In twelve hours they had exceeded their quota, total subscriptions at the end of the first day being \$300,000. At the close of the fifth day the final total of \$450,350 had been reached, making \$1,569,250 subscribed in the five loans.

The Boston Federal Reserve District went over the top in the Victory Liberty Loan drive by more than fifty millions of dollars. Subscriptions to the Fifth Loan amounted to \$425,159,950, an oversubscription of \$50,159,950, or 13.38 per cent over the quota of \$375,000,000. The Boston district finished third, New York being first and Chicago second. The estimated number of subscribers for Boston was 817,822.

A list of subscriptions by firms, including all from whom returns have been received, follows:



GOVERNMENTAL APPRECIATION.

FIFTH LIBERTY LOAN SUBSCRIPTIONS OF THE RUBBER INDUSTRY OF MASSACHUSETTS. EMPLOYEES AND COMPANY SUBSCRIPTIONS COMBINED.

A. J. ...	31,250	Converse Rubber Shoe Co.,	48,000	Lowell Industrial Wire Co.,	20,300
Acton Rubber Co.,	60	Dunlop Rubber Co.,	500	Maya Co., Wm. F.,	11,800
Atlas Rubber Co.,	6,300	Easton Rubber Co.,	500	Meade Rubber Co.,	8,200
Akron Tire & Rubber Co.,	300	Easthampton Rubber Thread Co.,	70,000	Monroe, Fred C.,	8,200
American Rubber Co.,	42,000	Elmore Tire Co.,	1,500	Montague, Ernest,	1,000
Appleton & Son, E. H.,	11,475	Empire Rubber & Tire Corp.,	800	Muttie Co., E. J.,	20,000
Apley Rubber Co.,	10,500	Goodrich, Inc.,	5,000	National Metal & Rubber Co.,	5,000
Archer Rubber Co.,	10,000	Goodrich Rubber Co., The B. B.,	2,300	Needham Tire Co.,	12,700
Archers-Spence Rubber Co.,	10,000	Firestone Tire & Rubber Co.,	25,500	New York Belting & Paving Co.,	20,000
Atlantic Rubber Co.,	600	Fisk Rubber Co., The,	1,250	Para Rubber Co.,	300
Avon Sole Co.,	1,250	Franklin Rubber Co.,	5,000	Reading Rubber Manufacturing Co.,	30,650
Bacon, Isaac, Inc.,	500	Garlock Packing Co.,	500	Republic Rubber Co.,	5,000
Bailev & Co., C. J.,	300	Globe Rubber Works.,	4,600	Revere Rubber Co.,	2,000
Boston, Machine Co.,	15,000	Goodrich Rubber Co., The B. B.,	2,300	Sanford Mills.,	1,050
Boston Rubber Shoe Co.,	96,000	Guth Percha & Rubber Mfg. Co.,	6,000	Standard Woven Fabrics Co.,	6,000
Boston Woven Hose & Rubber Co.,	100,000	Haulaway & Sons, Inc., C. L.,	405,600	Stoughton, Rubber Co.,	8,800
Brock Rubber Co., A. S.,	400	Hood Rubber Co.,	405,600	United States Rubber Co., Boston,	5,200
Cambridge Rubber Co.,	7,800	Howe, Ives, O.R.,	50	United States Rubber Co., New England,	20,000
Carr Co., F. S.,	12,600	Jacoby, Ernest,	5,000	United States Rubber Co., Springfield,	6,700
Chap. Reelings, C. F. W.,	16,650	Kenilth Rubber Co.,	450	Wood Plastic Webbing Co., J. W.,	6,850
Chilton Manufacturing Co.,	25,000	Killion Rubber Co.,	1,250		
Colton Elastic Webbing Co., George S.,	10,150	Lawrence Rubber Co.,	400		
Conant-Houghton Co.,	8,750	Lewis, Tracy S.,	3,000	Total	\$2,648,075

RECONSTRUCTION INFORMATION.

The United States Council of National Defense has placed at the command of the business world the information contained in the voluminous collection of data brought together, classified, indexed and partly digested by the Reconstruction Research Division. It also offers the services of the division in the procurement of such special information as may be desired and which may aid in the reorganization of industry and the resumption of trade, or which in any other manner may promote progress in reconstruction.

It will chart all information received from state, county and community organizations, keeping a digest of state reconstruction news. It has access to every important report of foreign reconstruction activity, proposed or accomplished. Having at its disposal reports from all war administration boards, bureaus and commissions, it can supply valuable information as to do-

mestic price data and production estimates, wage data, labor supply reports, foreign prospects, credit outlook, and price tendencies which will be invaluable to the manufacturer and business man. A vast amount of material from clipping agencies having a bearing upon any phase of reconstruction is instantly available, classified, indexed, and ready for reference.

In thus proposing to extend its service the council opens to the business public probably the largest and most complete assembly of up-to-the-minute reconstruction information in existence. Inquiries may be made by written communication, by telephone, or by personal representative. Requests should be addressed to the Reconstruction Research Division, Council of National Defense, 18th and D streets, N. W., Washington, D. C.

LOUIS BIRKENSTEIN IN CHARGE OF SURPLUS WAR PROPERTY.

Announcement has been made by the War Department of the promotion of Louis Birkenstein to the position of Chief of the Surplus Property Division, Office of the Director of Storage. Before the war, Mr. Birkenstein was head of S. Birkenstein & Sons, scrap rubber dealers, Chicago and New York. On proffering his services to the Government, he was appointed head of the Waste Materials Branch of the Salvage Division of the Quartermaster's Department, where he has acted as civilian expert and won the esteem of his associates through his ability, integrity, and patriotism. His new duty will be to dispose of the surplus of various articles acquired by the War Department.

BRITISH IMPORT RESTRICTIONS MODIFIED.

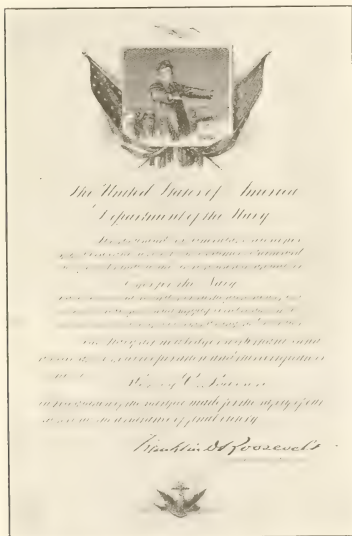
All restrictions upon the importation of rubber manufacture other than tires, except boots and shoes and stationers' sundries, have been removed, and these may now be imported freely under general license. Rubber tires and boots and shoes are now admitted under license up to 50 per cent of the 1913 imports. No rations have been set for stationers' sundries.

TESTING MATERIALS MEETING.

The American Society for Testing Materials will hold its annual meeting at the Hotel Traymore, Atlantic City, New Jersey, from June 24 to June 27. The sixth session, to be held June 26, will include the report of Committee D-11 on "Rubber Products," E. A. Barrier, chairman; "Steam Hose for Car Heating," H. J. Force; report of Committee D-13 on "Textile Materials," G. B. Haven, chairman, and report of Committee E-1, on "Methods of Testing," G. Lanza, chairman.

WATERPROOFED APPAREL IN GREAT BRITAIN.

Statistics for the six years 1913 to 1918, inclusive, show a large decrease in Great Britain's imports of waterproofed apparel during the last year. The figures are the following: 1913—\$31,544; 1914—\$41,151; 1915—\$26,162; 1916—\$46,319; 1917—\$44,027; 1918—\$10,763.



FOR SUPPLYING "EYES FOR THE NAVY."

An Investigation of German Ravages in Rubber Factories of Belgium and Northern France During the Great War.

Special Correspondence.

THE will to conquer new markets by force played a rôle in Germany's aggression that is daily being put in a clearer light by subsequent documents. In February, 1916, the German staff instituted a detailed and thorough study of the French and Belgian industries in the occupied districts. It was a very close inventory of more than 5,000 factories, for which were employed 200 experts specially recalled from the front for the purpose, out of the ranks of the combatant army.

What thought moved the German Staff to undertake and bring to a successful issue this comprehensive task? Was it a question of drawing up a list of the resources which, in case of a prolongation of the struggle, the supplies and the industries of the occupied regions would still be able to furnish? The date at which this work was executed, the certainty of victory that inspired the Hun High Command at the time, exclude this hypothesis. The end pursued was quite different, and if the facts of the case are examined with any logic, the aim will immediately stand revealed with startling clearness.

Starting with the principle that a thorough knowledge of the industrial and economic conditions of the occupied territory was necessary in influential circles in the German Empire, an attempt was made in this study to furnish a description as complete as possible; this has been gathered from statements made and information gained on the spot. This work covers the most important industrial branches, from a technical as well as from an economic point of view. It describes the conditions under which the various industries exist; it exposes their relations with Germany and with the markets of the world; it gives, furthermore, a summary of the repercussions that will probably result for Germany from the destruction of certain branches of these industries.

All things duly considered, this formidable survey had no other end to serve. Each of its chapters is devoted to one of the industries of the invaded countries, and each industry there is examined from the following triple point of view:

- 1—Its position at the time of the invasion.
- 2—Its position resulting from the damage sustained, at the time of the investigation.
- 3—The profit that the German industry could derive from its disappearance and from the destruction of its factories.

The damage found by the experts of the great German Staff are divided into two classes and placed under the following headings:

- 1—Damages caused directly by the operations of war.
- 2—Damages resulting from the proceedings of the German authorities.

This statement, which in reality constitutes an avowal signed

by the hand of the thieves themselves, is limited to the zone occupied by the German armies and was effected in February, 1916; consequently, it does not relate the total damage sustained by the French establishments, for the victory of the Marne had already forced the enemy to retreat.

Now, immediately behind the French front there was a whole series of flourishing industrial towns before the war, whose factories must now be considered as having been absolutely destroyed. Such is the case of Rheims, Armentières, Béthune, Lunéville, Verdun, Dunkirk, and many other points. This reservation has, moreover, been well made, "for in order to estimate the whole damage," adds the German document above considered, "the data of this inquiry should be amplified by figures which it will not be possible to fix

until after the end of the campaign." Thus from each page of this "confidential" work, truly stupefying in its cynicism, glares the constant concern to destroy methodically and deliberately every industry capable of competing in the slightest degree with the German industry; and the conviction proudly proclaimed of thus aiding in the development and prosperity of Germany is displayed on each page.

In a chapter devoted to coal mines, for instance, the authors of the "confidential" report estimate the losses that France will suffer, at 13 million tons for the first year and 10 million tons for the succeeding years, since Lens, Liévin and Meurchain had been rendered inexploitable. "When they shall have been put in good condition again," says the German document, "the coke ovens of the Lens company will for years be obliged to import their supply of coals for coke, since there will be no bituminous coal from their own mines, because of the destruction of the works and the flooding of the mine." The establishments thus attacked comprise 554 ovens with an annual production of 620,000 tons of coke.

The weaving industry, which in many respects is so intimately related to the rubber

industry, has not been spared, either. Still quoting from the admission of the German experts, it will take two years to restore the 1,900 weaving establishments of Lomme, Haubourdin, Comines, Wervick, Perrenchies, Deulemont, Provins, and one year for 1,400 others. And the German investigators dwell on this situation, showing all the benefit that the German industry will derive therefrom. "In order to be able to take advantage," says their report, "of the terrible blow sustained by the industries in the occupied regions, it is of particular interest to Germany to set her intact mills working as soon as possible, immediately after the war is ended. An outlet of enormous importance is certain to open for them in France!"

"As for the rubber industry," finally says the report, "it will



PLANT OF ENGLEBERT & CIE.



OSCAR ENGLEBERT.

certainly take some years after the war to procure the necessary rolling-mills, calenders, and special machines and tools, and the despoiled factories will certainly lose many of their customers. Let us know how to profit by this circumstance."

The avowal is significant, and this document, fallen into French hands at the time of the defeat of the Germans, and brought before the Allied Council by the French Minister of Finance, M. Klotz, shows, without further discussion, that one of the principal objects of the German campaign was nothing but the destruction of French and Belgian industry, to the advantage of German industry. This is just what the French Prime Minister, M. Clémenceau, crushingly summed up when he said during an interview accorded the American press: "that the war launched by Germany and brought by her into the invaded territories, in the pillage and destruction, was a thorough and well-calculated conspiracy with the view of exterminating France industrially and commercially as well as militarily."

This inventory ordered by the German Staff at the moment when cannon thundered at Verdun is, as we said before, incomplete, since, for two years more, the invader was at liberty to complete his work, methodically dismantling what the hazards of the bombardments had spared in the occupied towns. Nevertheless, it was as well to quote from it, for the cynical admissions which are displayed in it constitute the very best preface it would be possible to find for the investigation with which THE INDIA RUBBER WORLD has entrusted us regarding the ravages committed by the German armies in the rubber factories of the occupied regions.

BELGIUM.

Before the war, Belgium represented a double interest, as far as rubber was concerned: it was both an importer of the crude article and a rubber manufacturing center.

The Belgian port of Antwerp was the place of discharge for huge cargoes of crude rubber, the wild grades of which came from the Congo, while the plantation varieties were shipped from the Netherlands East Indies or the Federated Malay States, where the Belgian capitalists had very large interests. For these two kinds of merchandise, the market of Antwerp was of the utmost importance and ranked immediately after that of London.

This facility in the matter of obtaining supplies of the raw material, combined with the cheapness of fuel and the abundance of labor, caused the erection on Belgian territory of numerous establishments where practically all articles of rubber were manufactured, from tires to surgical supplies.

In Antwerp there was a very powerful group of importers, most of them quite well-known in the United States, for instance: Grisar & Co., Bungé & Co., Osterrieth & Co., L. & W. Van der Velde, G. & C. Kreglinger, who in 1913 had received about 8,000 tons of rubber coming from Africa and chiefly from the Congo, 3,000 tons arriving from the plantations of Ceylon, 1,000 tons from the Straits Settlements, shipments from Borneo, the Ivory Coast, and from Dahomey; in short, about 15,000 tons of rubber, of which a certain quantity was reexported to France, Germany, the United States, and above all to Russia. A considerable part, 4,000 to 5,000 tons, however, remained in the country to be converted into manufactured products. For a population of 7,500,000 souls, this proportion was large, for France with 40,000,000 inhabitants did not consume more than 16,000 tons of rubber, and England, not more than 20,000 tons. This, therefore, shows the industrial activity of the country.



EDOUARD BUNGÉ.

Under such circumstances, it is easily understood that at the time of the German invasion, which came about as suddenly as it was unexpected, the stocks of crude rubber lying at the docks of Antwerp must have been considerable and may have run into several thousands of tons. Thanks to the speedy and efficient measures taken by the owners, the greater part of this merchandise was removed to England and escaped seizure by the enemy.

According to information which the Grisar company of Antwerp has kindly furnished, when the Germans occupied the great Flemish port, only 632 tons of crude rubber were captured, for which, however, they paid with worthless requisition tickets. This represents a dead loss of about 30 million francs to the Belgian importers. A portion of this material was forwarded to Germany, where the Continentale undertook to use it, and the rest was sent to Brussels, where General von Bissing ordered a military factory to be installed in the Jenatzky-Leleuz works, for the purpose of manufacturing tires and tubes to supply the automobile service of the campaigning armies.

For the reasons previously mentioned, the Belgian rubber industry in 1914 had attained a very high degree of prosperity. This industry was created in 1852 when Gustave Luyck built his works at Molenbeek-Saint-Jean, just outside of Brussels. Soon after, in 1859, an American, J. G. Stickney, one-time partner of Samuel Colt, uncle of Colonel Samuel P. Colt, of the United States Rubber Co., established himself at Menin, and applied to the treatment of rubber the new processes of vulcanization that Goodyear had just discovered. The increasing popularity of the bicycle and the development of the automobile afterward led to the manufacture of various products in which rubber was used in a number of ways.

Finally Belgium, like Goodrich, produced "Everything in Rubber."

Next to the house of Englebert & Co., which is one of the largest European firms, were the works of the Cie. Coloniale du Caoutchouc, Ghent; the Société pour le Commerce et l'Industrie du Caoutchouc, Alost and Brussels; Ghysel & Co., L e m b e c q; Hannot at Selessin, Defauw Frères and Latour, Capelle et Goethals, Menin; Jenatzky - Leleuz, Brussels. At Brussels, too, were established the Manufactures des Câbles Electriques et de Caoutchouc and finally, there was the factory of the Société des Câbles Electriques, at Huisynghem.

Among the concerns of minor importance may be noted Michel-Jackson, Menin; La Manufacture Belge de Caoutchouc, d'Amiante; the Société Anversoise, Antwerp; the Société Anonyme de Caoutchouc and the Cie. Générale pour la Fabrication du Caoutchouc, Brussels; Finet Ducobu, Boussu-les-Mons; Gevaert et Fils, Deynze, and Lechat, at Ghent.

In consequence of the German occupation, all these factories, with one single exception, are in such a plight that it is absolutely impossible for them to work, and thousands of laborers formerly employed are out of work and penniless. Those factories that were near the firing line, like the factory at Alost and the two establishments at Menin, no longer exist. They



MAYOR LEON OSTERRIETH.

have been completely destroyed by the bombardments and not a stone has been left standing. As for the others, even if the main walls still stand, the reserves of raw material, the stocks of manufactured goods, and every bit of machinery have been methodically removed by the Germans. Mills, calenders, mixers, tables, presses, vulcanizers, molds, mechanical and electric motors, generators, were first concentrated at Brussels, and finally taken to Germany, to be distributed among the manufacturers beyond the Rhine. Except the works of Jenatzky-Leleuz, which by special favor have been spared, nothing to-day remains of the other establishments but the four walls.

"Alas!" said Oscar Englebert during an interview, "the Boches have occupied our factories since the beginning of the war, and God knows how we have had to suffer from this occupation! At the outset, when they considered themselves victorious and expected to annex Belgium, their depredations were slight. They contented themselves with occupying the buildings, organizing a storehouse for tires, installing photographic workshops of the army, and creating barracks for transient soldiers, where sometimes as many as 2,000 men were lodged. During this relatively quiet period, the General Staff was content with ordering the removal from our works of all the stocks of pneumatic and solid tires, as well as tubes. After the repulse on the Marne and the halt on the Yser, all the raw materials were requisitioned, from rubber to sulphur, from the reclaimed rubber and factices to the talc, from the fabrics to the steel wires. Then came the turn of the heavy machinery; mills and calenders, steam boilers and kettles, all were shipped to Germany. To remove these enormous pieces of machinery, the walls had to be broken, the foundations had to be dynamited, so that the factories are at present in a state of complete devastation."

The proprietors were not to be spared a single annoyance. The head of the concern, Oscar Englebert, was brought before the Prussian court martial on the charge of having concealed a part of his stocks and thereby disobeyed the orders of the Kommandatur, and it was due only to his rights as Consul of Spain, at Liège, that he escaped deportation to North Germany. Despite these experiences, M. Englebert has lost none of his energy, and is actively engaged in restoring his factory, which he hopes to be able to put in working condition within a few months.

The same condition is found at the Colonial Rubber Co., Ghent, which used to manufacture tires. The buildings are left standing, but the stocks and machines have disappeared.

Of the factories of the Société pour le Commerce et l'Industrie du Caoutchouc, the one at Alost no longer exists; the other, at Brussels, has been deprived of its heavy machinery and all its belting. The smaller pieces, the tools and molds, have been broken up and sent away to be melted.

The conduct of the Germans with regard to the works of Ghysel & Co., at Lembeek, was singular. During the period in which they believed that they were victorious, they enlarged the works and considerably developed the manufacture of tires; but as soon as the tide of war began to turn against them, they hastened to remove all the machinery and implements, leaving nothing but the buildings.

The structures belonging to the two factories of the Cables Electriques at Brussels and at Huysinghem are intact also, but all supplies and the stocks of copper wire have been removed and a great part of the apparatus has been broken up and sent away to be melted.

In the midst of all this devastation, the buildings of the Jenatzky-Leleuz works at Brussels alone have been left with their machinery intact.

A very rough estimate places the total damage caused to the Belgian rubber industry by the occupation, the requisitions, and the thefts by the German army, at one hundred million francs. Should not the Huns reimburse this amount?

URGENT NEED OF RAW MATERIALS AND EQUIPMENT FOR THE RESUMPTION OF INDUSTRY IN BELGIUM.

The urgent need of raw materials and equipment in reestablishing Belgian industries is emphasized in a report by Trade Commissioner Harry T. Collins, Brussels, Belgium. The estimate given in the following abstract is based on the requirements for the first three months of resumption of industry, covering the principal articles of rubber or containing rubber. Materials which are undoubtedly being obtained in Belgium have been omitted.

Coal mines		
Rubber for joints	metric tons	15
Waste for packing		15
Tricladate latex	meters	240,000
Mining cables		100,000
Rubber belting		18,500
Glass industry:		
Rubber belting	meters	425
Sheet rubber	square meters	240
Rubber check valves	number	448
Textile industries:		
Rubber rollers	metric tons	3,160
Paper industry:		
Rubber cloths for machines	number	14
Rubber guide belts	meters	70
Rubber belts		15,000
Rubber blocks	metric tons	6
Rubber sheets		6

AVIATOR'S WIRELESS-TELEPHONE APPARATUS.

Some weeks ago the Secretary of the Navy conversed with an aviator in flight, 150 miles distant from the Secretary's desk. This broke all former records, which were from 40 to 50 miles.



(C) Underwood & Underwood, N.Y.

TELEPHONE HEAD-PIECE.

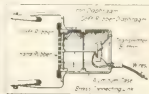
The Texas Gulf Sulphur Co. has opened two new sulphur wells at Gulf, Matagorda County, Texas, and is developing very large deposits of sulphur similar to those already operated in Louisiana and Texas. Over 1,000 tons are now being received daily. This makes three sulphur companies producing from the Gulf region: the Union Sulphur Co., which is the original and which developed the Frasche process; the Freeport Sulphur Co., which has been in successful operation for several years, and the Gulf company, which has just come into operation.

SULPHUR PRODUCTION TO INCREASE.

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PHILIPPINE IMPORTS OF RUBBER GOODS.

Imports of rubber and rubber goods into the Philippine Islands during 1918 are given in recently published statistics as follows: rubber and manufactured rubber goods, excepting tires, \$581,559; automobiles and parts, including tires, \$3,262,832.50. Attention is directed to this evidence of the buying power of the people of the Philippines, numbering about 10,000,000.



SECTION OF TRANSMITTING MECHANISM SHOWING RUBBER PARTS.

A sectional view of the instrument employed by the aviator shows it to contain a hard-rubber mouth-piece, an internal soft-rubber diaphragm to exclude dust and water from the transmitting mechanism, and soft-rubber cushions bearing against the face of the aviator who wears the instrument held in place by elastic straps, as shown in the picture. By means of a device of this sort, Lieutenant Herbert E. Metcalf delivered President Wilson's cable address 3,000 feet in the air.

The Goodyear Rubber Plantation.

WHEN The Goodyear Tire & Rubber Co. determined not long ago, to organize a plantation for the production of a large part of the rubber they require in their Akron factories, they sought one of the best locations to be found in the Far East and found it in the northerly part of the island of Sumatra. This extensive island lies parallel to the Malay peninsula, a short distance to the westward. Sumatra belongs to Holland and contains large areas specially suited for the growth of the *Hevea* or Pará rubber tree.

AN IDEAL LOCATION.

The new Goodyear enterprise is located near the region of volcanic mountains about one-half hour's ride by motor car from the town of Siantar, the center of the tea district of the northern section of Sumatra. Here a vast plantation is in process of formation, embracing 20,000 acres of jungle land. Between 8,000 and 10,000 acres have already been planted with rubber trees.

The soil is plentifully supplied with such mineral salts as sulphates and phosphates of alumina, iron, lime, magnesia, potash and soda, as well as carbonate of lime. It is probable that no better rubber-growing land is anywhere to be found. The site chosen lays at an altitude of from 300 to 500 feet and the land is gently undulated and well supplied with streams.

AMERICAN MANAGEMENT AND EQUIPMENT.

On this estate from 7,000 to 8,000 laborers are employed. Some of these are imported from Java, some from China, and others from India. There is a small proportion of native Sumatrans among the number.

Practically only American-made machinery and tools are employed in preparing the land and operating the plantation, such, for example, as engines, tractors, stump pullers, automobile trucks, picks and other hand tools.

The army of coolies is supervised by a competent staff of overseers, planters, and engineers.

LABOR AND SANITARY CONDITIONS SAFEGUARDED.

The general manager of the Goodyear plantation, in speaking of this company's accomplishment, gives the following outline of the work involved. The plantation is divided into six divisions, each approximating 3,000 acres and under a separate manager. About 3,000 acres of jungle in the 20,000 of the plantation

close to Belawan, its port of shipment, and in its various appointments is practically independent of the outside world. There is a plantation hospital with 400 beds and the best medical attention is thus made available for the needs of the plantation workers. Sanitary conditions are being steadily improved.

CLEARING THE JUNGLE.

The plantation area was overgrown with the densest jungle anywhere to be found and many of the trees were enormous.

In the process of cleaning the jungle for planting, axemen fell the trees and are followed by Chinese plank sawyers who save all the lumber possible for use in constructing the coolie quarters. It requires the labor of 1,300 coolies for two months to fell the timber on 3,000 acres.

CLEARING AND PLOWING BY STEAM TRACTORS.

After removal of the underbrush and timber the stumps are removed by special pullers and tractors. No explosives are used in the work. After clearing, the land is plowed by a big steam tractor, to the depth of about 20 inches. The effectiveness of plowing by tractor is shown by the fact that by this means twenty acres can be plowed in a day, while 250 coolies can plow



THE BEGINNING OF ROAD BUILDING.

but three acres in the same time. About 100 trees are planted to the acre and the entire tract is kept free of weeds. The labor of felling and uprooting the jungle trees and cleaning away the underbrush preparatory to planting represents only a part of the work of establishing a plantation.

ONE HUNDRED AND TWENTY-FIVE MILES OF GOOD ROADS.

Good roads must be built that all parts of the plantation may be reached easily and quickly. Building and maintaining highways must be a constant development and already 125 miles of substantial roadway has been built on the new plantation. The whole scheme is a huge engineering proposition terminating in extensive factory and shipping facilities to handle the latex and prepare the rubber.

THE ENTERPRISE OF GOODYEAR.

The development of this newest all-American rubber plantation is of much interest to the rubber industry all over the world. The Goodyear company has so often accomplished comparably big things that a twenty-thousand acre rubber plantation at the Antipodes seems quite fitting to go with the Goodyear scheme in general. It is interesting, however, to conjecture not only what



AN ASSISTANT'S BUNGALOW.

estate are reserved for the natives. The laborers are accorded the very best treatment. Labor troubles are entirely eliminated and the coolies are thoroughly contented.

The plantation is distant 75 miles from Medan, which is very

the conservative fathers of the industry of a couple of generations ago would have thought of this development, but how they would have regarded the huge Goodyear cotton acreage in Ari-



A MATURE AREA.

zona with its twenty or more gins; the Goodyear cotton-duck mills in Connecticut, and the Goodyear factories in Canada! Belike, they would gravely disapprove them all as things that broke trade precedents and overturned existing conventions. Were these respected worthies alive to-day they would certainly marvel and ultimately approve these daring projects of the "Napoleon of the rubber trade."

RUBBER TRADE INQUIRIES.

THE inquiries that follow have already been answered; nevertheless they are of interest not only in showing the needs of the trade, but because of the possibility that additional information may be furnished by those who read them. The editor is therefore glad to have those interested communicate with him.

(710.) A manufacturer requests the addresses of makers of gummed tape for sticking tire wrappings.

(711.) An inquiry has been received for the addresses of manufacturers of paint such as is used on rubber toys, balls, etc., and which will not crack.

(712.) A correspondent desires the addresses of manufacturers of tissue-paper transfers for marking inner tubes.

(713.) A correspondent wishes to get in touch with manufacturers of valves suitable for small air seat cushions.

(714.) An inquiry has been received for the addresses of manufacturers of machinery for making rubber stamps.

(715.) A reader requests the addresses of manufacturers of collapsible tubes for rubber cement.

(716.) A manufacturer requests data concerning the use of creosote solution in improving the quality of washed brown crepe.

TRADE OPPORTUNITIES FROM CONSULAR REPORTS.

Addresses may be obtained from the Bureau of Foreign and Domestic Commerce or its district or cooperative officers. Request for each should be on a separate sheet, and state number.

(29,079.) A firm in Spain desires to purchase automobile truck tires. Quotations f. o. b. New York, cash against documents. Correspondence in Spanish.

(29,120.) A commercial agent in France desires agency for

sale of druggists' sundries. Correspondence may be in English.

(29,122.) A man in Denmark desires agency for sale of elastic, garters, dress shields, etc.

(29,142.) A Norwegian firm desires to purchase and an agency for sale of rubber and rubber goods. Payment through New York bank, preferably cash against documents at destination.

(29,149.) A Norwegian manufacturing firm desires to purchase rubber goods, fingers, gloves, footwear, etc. Payment through New York bank.

(29,153.) American firm with Italian branch and planning other European offices, desires agencies for insulated wire and cables, rubber goods, and all machinery and materials for their manufacture.

(29,156.) A Norwegian firm desires to purchase and an agency for sale of rubber goods, rubber shoes, etc. Cash against documents, destination or New York.

(29,157.) A Norwegian firm desires to purchase and an agency for sale of belting, rubber, rubber goods, etc. Credit through local New York banks.

(29,161.) A man in Norway desires to purchase and an agency for sale of rubber and rubber goods. Cash against documents.

(29,162.) Representative of Danish firm now in America desires to purchase and an agency for sale of rubber garments. Correspondence may be in English.

(29,168.) Norwegian firm desires to purchase and an agency for sale of rubber and rubber goods. Cash against documents, New York or destination.

(29,194.) An American firm with Danish branch office desires agencies for sale of rubber goods, wearing apparel, etc. Opportunity offered for display of goods in Denmark.

(29,219.) A man in Switzerland desires to represent first-class American firms to sell pneumatic and truck tires. Correspondence may be in English.

(29,249.) An Italian desires agency in Italy for sale of shoes and rubber goods. Correspondence in Italian.

(29,272.) Three firms in Belgium desire to communicate with makers of solid and pneumatic tires.

(29,274.) Belgian firms desire agencies for balata belting.

(29,284.) A Swedish firm desires to purchase and an agency for fountain pens. Quote f.o.b. New York.

(29,312.) A Norwegian firm desires to buy and an agency for sale of rubbers, rubber heels, etc. Cash against documents at New York or destination of goods. Quote f.o.b. New York.

(29,362.) Exclusive agency desired for sale of rubber goods at wholesale by man in this country expecting to establish offices in Paris and Brussels.

(29,366.) A Belgian firm desires to communicate with makers of balata belting.

(29,372.) Belgian firms desire to purchase machinery belting.

(29,378.) Man in South Africa desires to purchase golf balls, etc. Submit catalogs and prices. Payment through an export house.

HOW TO TAG A TIRE.

When the average man tags a tire he ties it so the tag hangs on the outer rim. The most natural way to move a tire is to roll it, whereby the tag is often damaged or torn from the tire. The right way is to tie the tag so that it hangs on the inside. Then another tag should be securely fastened to the inside of the tire.

AVULAS COMPOUND IS A NEW VEGETABLE OIL LUBRICANT AND softener having a melting point of 90 degrees F. It is said to offset the tendency of free sulphur coming to the surface and to render easily removable from the molds all classes of molded goods.

Giant Tires for Handley-Page Airplanes.

PRESENTLY the largest pneumatic tires made for any purpose are those with which the famous Handley-Page airplanes of the British Government are being equipped. They are Palmer Cord Aero Tyres 1500 by 300 mm. (59 x 11.8 inches), or approximately five feet in diameter and one foot in cross-section, and greatly exceed all regulation pneumatic-tire sizes for either airplanes or motor trucks.

The 1918 S. A. E. specifications for United States Government airplane landing wheels specify four sizes, the largest of which is 800 by 150 mm. (32 by 6 inches), the others being 750 by 125 mm. (30 by 5 inches), 700 by 100 mm. (28 by 4 inches), and 700 by 75 mm. (28 by 3 inches). It was anticipated, however, that larger sizes would probably be required and added to the list. The specifications call for tires of the clincher type, smooth tread, constructed of two or more cord plies of long-staple cotton, so arranged that an equal number of plies run in each diagonal direction across the tire, each ply being separated from the adjoining ply by rubber compound. Even the giant cord pneumatics now being turned out by American manufacturers are dwarfed beside these Palmer airplane tires, the largest pneumatic truck tire regularly on the market being 48 by 12 inches, and other sizes being 42 by 9, 40 by 8, 38 by 7, and 36 by 6.

That these giant tires are needed becomes evident on considering the size and weight of the Handley-Page airplane. Its wing span is 126 feet, the width of the span is 12 feet, and the length of the fuselage is 65 feet. Equipped with a 350-h.-p. Rolls-Royce engine and known as the "Berlin Bomber," it weighs 15 tons fully loaded, over 5 tons of which is useful load.

This type of machine represents the maximum achievement in heavier-than-air flying during the war, and now promises to be used extensively in commercial aviation, as it is able to carry, for example, a five-ton load of passengers, mail, or merchandise in a non-stop flight equivalent to the distance between Boston and St. Louis, in twelve hours. It will be recalled that one of these great airplanes flew from Ipswich, England, to India, a distance of 5,800 miles, last winter and covered 700 miles of the distance over the Mediterranean, which was a record flight for a land machine flying over water. It is also one of these machines which recently arrived in Newfoundland, and with which a transatlantic flight will be attempted sometime during the month of June.

As compared with the airplane tires of former years these latest and largest tires represent a startling development. In the early days of aviation all sorts of makeshifts were resorted to. Bicycle and motorcycle tires of fabric construction were first employed on some of the pioneer machines, but they proved costly and uncertain. Later, as larger and heavier machines were constructed to carry more passengers and heavier loads,

some builders even went so far as to use full-size automobile tires. The latter answered so far as reducing the shock of landing was concerned, but were far too heavy and offered too much wind resistance.

The development of special tires to fit the peculiar requirements of aviation began about 1910. It was soon discovered that great resiliency is a very important factor and that a live, springy tire not only helps to absorb the shock of landing but actually aids the machine to get off the ground at the beginning of a flight. The need of security against punctures and blowouts was also appreciated. As the superior resiliency of cord tires for motoring had become recognized and the success achieved by this type of tires in automobile track races had demonstrated their dependability, experiments were made with

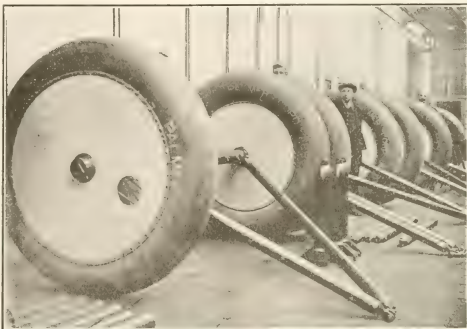
cord tires in aviation, with the result that cord tires for airplanes have been refined to a point of efficiency equal to that of cord tires for gasoline and electric automobiles.

The Palmer was probably the first tire of cord construction to be used for aviation purposes in England, and it has ever since held a prominent place among airplane tires. Invented by an American, John F. Palmer, of Chicago, in 1893, this parallel-thread fabric construction was first used in racing tires on bicycles and later modified and first applied to the manufacture of automobile tires in 1900. In its latter form it was known as the Palmer cord

to distinguish it from the lighter Palmer bicycle tire. It consisted of two layers of parallel-lying cords crossing each other at such an angle that they were tangent to the rim and nearly in the line of strain which falls upon all equally. Each cord consisted of several threads carefully rubbered and flattened.

More recently, as the disadvantages in using round cord were recognized, a new type of ribbon of flat cord approximately one-half inch wide was developed. These inextensible flat strips can be placed on the tire core at a true tangent to the rim, that is, at right angles to the spokes of the wheel. This position gives the most efficient power transmission from the rim to the tread for the reason that force is best transmitted in straight lines.

In America The B. F. Goodrich Co. in 1910 introduced as a regular product an airplane tire which in construction was a modification of the Palmer bicycle tire. It was smaller than a bicycle tire in diameter, but of larger cross section, being 20 by 2 and 20 by 2½ inches. About the same time the Continental Rubber Works was making airplane tires in these same sizes and also 20 by 3 inches. The Pennsylvania, Goodyear, and Hartford companies were offering airplane tires 20 by 4, 26 by 2½, 28 by 2½, 28 by 3 and 28 by 3½ inches and weighing 6½ to 8½ pounds each, the former company featuring leather as well as rubber treads. Two of the 20 by 4 tires were said to be capable of carrying a 1,000 to 1,200-pound flyer.



Continental & Unimog, N. Y.

TIRE EQUIPMENT OF THE "BERLIN BOMBER"

Tires combining extreme lightness with toughness and resiliency had thus been the early desideratum, but, with heavier and more powerful machines, maximum cushioning ability to resist the lateral thrusts that occur when an airplane side-swipes the earth in landing, became fully as important as light weight, so that large cross-section was essential. As early as 1909 Palmer cords had been made up to 7-inch cross-section, and in 1915 a new Goodyear airplane cord tire was brought out in America to meet this need. It was a 26 by 4 clincher with a carcass consisting of four to six-cord fabric layers. Since that time developments have been rapid, owing to the impetus of war, and various companies have been producing airplane tires of ever larger diameter and cross-section as the needs of the Government have advanced.

It is a far cry from the frail airplane wheels and small tires of 1910 to these giant wheels and Palmer cords with their canvas shields to prevent wind resistance to the turning of the wheel as a result of cross drafts through the spokes, but as the development of aviation has been phenomenal and revolutionary, so also has been the achievement in tire building. Indeed, the latter has been a big factor in making the former possible. But for cord-tire construction, the airplane might not be what it is to-day, and it is a matter worthy of more than passing mention that the Palmer tire, the pioneer in its class, still heads the list of progress.

PNEUMATIC TIRES ON TRUCKS.

FOR vehicles up to 1,500 pounds capacity, inclusive, pneumatic tires should be used except under very rare conditions. Vehicles of 2,000 to 3,000 pounds capacity are being rapidly changed to pneumatic equipment in the large majority of cases, due to the development of the cord tire. A considerable percentage of 2 to 2½-ton vehicles will probably be placed on pneumatic equipment when the subject has been more clearly demonstrated and design changes which may be found necessary have been made.

A limiting factor to the preceding statements is to be found in the character of roads on which pneumatic equipment is operated, and the freedom of the roads from litter of scrap-metal, glass, etc.

The modern cord tire is excellent for operation on almost every kind of road. The structural strength of these tires renders them less susceptible to injury from stone bruises, etc., when operated on rough roads, if the proper inflation pressures are used, than the fabric type. The types of tread which have been developed are of great assistance in snow and mud and on wet surfaces. In consequence, with these advantages, it is safe to say that the pneumatic tire will compare favorably with the solid tire under almost every condition of road.

ADVANTAGES OF PNEUMATIC TIRES.

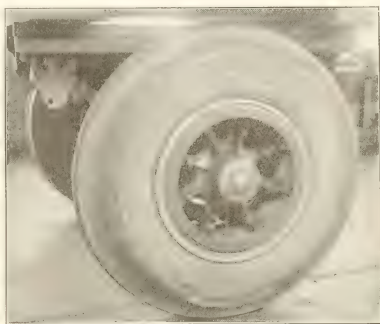
The claims of advantage may be listed as follows: (1) reduction in mechanical repairs; (2) increase in permissible speed; (3) decrease in gasoline consumption; (4) decrease in oil consumption; (5) less fatigue for men; (6) lessened depreciation of roads; (7) greater tractive ability.

OBJECTIONS TO PNEUMATIC TIRES.

The objections to pneumatic tires are not so numerous, but need careful consideration lest the prospective buyer be carried away with the idea that their use offers a solution for all troubles, and involves no special problems needing attention. The objections are: (1) high initial cost compared with solid tires; (2) the need of carrying emergency equipment; (3) the difficulty attendant on making road changes due to weight and high inflation pressures required; (4) reduction of the high-gear ability and limitation of the total ability due to larger diameter

of wheels; (5) limitations imposed on the size of brakes, due to the small size of wheels.

The larger sections used in these tires, together with the space taken up by the demountable rim, leave a very small wheel diameter, and this imposes severe limitations on the size of brake



From "The Journal of the S. A. E."

12-INCH CORD TRUCK TIRE ON REAR OF TRAILER.

equipment and decreases the ability of the brakes at the same time. This is very important because the greater speeds put considerably heavier duty on the braking systems.

The heavy duty pneumatic tire, particularly in the larger sizes, has come into prominence in the last few years when engineers were so completely occupied as to leave little time for the thorough investigation of the subject to determine what effect their use would have on future design. That there will be need of a considerable change in design with respect to some particulars seems very evident.

The increase in speed carries with it a demand for more efficient brake equipment. Inasmuch as air pressure will be needed to inflate the tires, calling for an efficient air compressor, it may be found feasible to add the other elements necessary to provide for the use of air brakes.

PRACTICAL TEST.

A leading American tire manufacturing company is manufacturing a cord construction pneumatic tire of the straight-side type which has proved a successful commercial proposition.

A fleet of five-ton trucks last year made a successful trip from Boston to San Francisco on 40 by 8-inch front and 44 by 10-inch rear pneumatic tires. This trip was made in 257 hours and 10 minutes running time at an average of slightly over 14 miles per hour, a full load being carried all the way. The trucks at the end of the trip were in excellent condition and the whole performance was rendered possible by reason of freedom from vibration troubles resulting from the cushioning qualities of the big pneumatic tires.

GENERAL ELECTRIC CO. ELECTS DIRECTORS.

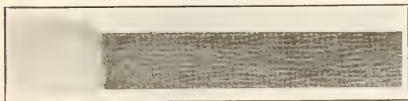
The General Electric Co., Schenectady, New York, at its meeting held May 13, 1919, elected the following directors: Gordon Abbott, Oliver Ames, George F. Baker, Jr., Anson W. Burchard, C. A. Coffin, George P. Gardner, Henry L. Higginson, Robert Treat Paine, 2d, Marsden J. Perry, Seward Prosser, E. W. Rice, Jr., Charles Steele, Philip Stockton, and B. E. Sunny.

¹Abstract from a paper by B. B. Bachman, published in "The Journal of the Society of Automotive Engineers," April, 1919, pages 298-302.

Developments in Rubberized Unwoven Fabrics.

By Roland B. Respass

WOVEN FABRICS and fibrous materials enter very largely into rubber manufacture, for strengthening or "filling" rubber goods. Fibers have been used as a filler by mixing with rubber and sheeting out of the compound or forming it in molds. Where it is desired that the fibers be of the form to give considerable added strength to the rubber products woven cloth is usually employed. Unwoven fabrics give as great



FROM COTTON BATTING TO ARTIFICIAL LEATHER.

or greater strength than woven goods, and may be used in rubber manufacture more cheaply than woven goods, and are therefore, not only of interest as offering possibilities in improving the product but in cost reduction as well.

The writer experimented to produce an unwoven fabric to be used in making automobile tires. His first attempts were along lines disclosed as far back as 1867 in a patent issued to Charles Saffray, M. D., who used a cotton batting which he saturated with a binding agent, using wire mesh to hold the fiber sheet when dipped in a thin liquid solution, after which it was pressed to take out the excess solution, and dried and sheeted, to be used as a leather substitute. Investigation of the patent records did not disclose a practical method of manufacture, and the writer started out to devise and develop such methods.

In his early experiments he succeeded in making a strong sheet resembling split leather, which was capable of being coated and embossed to simulate leather, but this sheet was no more successful than the experiments of a number of others, and it was decided that such fabric would not be suitable for automobile tires because it would stretch like leather, and the tire probably would not hold its shape.

Experiments with cords and threads were then begun and later the fiber sheet was combined with the cords and threads. During the course of these experiments results were produced which appeared adaptable to many uses in the rubber trade, but the conditions resulting from the war presented a serious handicap due to the difficulty in gaining assistance from those who were engaged in government work. After two years of con-

quest desired. The fiber then passes to a saturating machine where a heavy rubber solution is pressed into the fibers to saturate or coat each individual fiber, after which it goes to a dryer where the solvent is evaporated, and then it is passed between heavy pressure rolls and pressed into a firm sheet resembling split leather, the entire process occupying not over twenty minutes—from cotton to "leather."

This leather is then ready to be coated with rubber surface dressing after which it may be embossed to design and vulcanized; or, if the leather dressing is to be of cellulose or similar dressing, the sheet is vulcanized and then coated, after which it may be embossed to any design required. The leather may be made any weight or width and any length in which the rolls may be handled. Its strength can be varied as may be required, and some samples produced have tested up to 6,250 pounds to the square inch, giving nearly double the strength of standard belt leather. For greater strength there are other processes, including strings or cords placed in the direction of greatest strain, which will produce belting having a tensile strength up to 10,000 pounds.

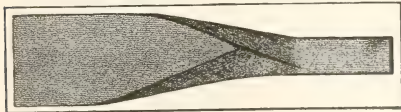
The peculiarity of this leather when examined closely is that it does not look like rubber at all, but resembles genuine leather. It is difficult to decide that rubber actually enters into its composition. The stronger sheet has the appearance of raw-



RUBBER SHOE LACES MADE FROM COTTON FIBER.

hide and the other sheets look like split leather. By use of a sizing on the surface of the cotton sheets before saturation, a product almost identical with the hair side of genuine leather is produced. It may be finished with ordinary shoe polish or dressing and resembles and has the feel of kid leather. Any kind of dressing that is used in finishing leather or artificial leather may be used. It may be finished by hand as hides are finished, and give the same rich appearance, or it may be finished by machinery as artificial leather is produced. The samples finished in black or colored patent leather feel and look like the genuine article. There seems to be a perfect affinity, in this process, between the cotton and the rubber and between the rubber and the cellulose or oil dressings.

The field for use of this leather alone seems very great, but the leather in sheet form seems only the beginning of its possibilities. After the sheet rolls are prepared and before they are vulcanized, the material may be cut to forms and molded or laminated and thereafter vulcanized to retain its form. This quality opens a wide field for development in the manufacture of power and transmission belts which may be made with or without the thread or cord reinforcement; also shoe counters and slippers vulcanized in one piece may be produced and such slippers may be sterilized, subjected to any reasonable heat or boiled without injury. Hospital blankets may be made without the cold, clammy feel of rubber blankets and yet having their waterproof qualities. Also boxes, cases, suitcases, bags and hundreds of small formed articles for which leather has been heretofore used exclusively, may be produced rapidly and cheaply.



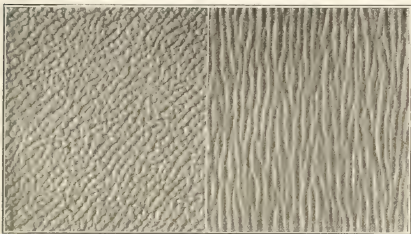
RUBBER TAPES OR BELTING, OF COTTON FIBER.

stant work, the writer is now able to present a brief outline of what he has accomplished and covered by his patents and applications for patents.

The production of leather substitute, for instance, has been worked out to the point that the cotton from the bale, or cotton linters, old rags, old jute bags, etc., are put in a picking machine that picks apart the fibers, which are then fed to a carding or garnett machine and formed into fiber batting of any width or

The same principle applies to the production of narrow belts and straps, cordage, shoe laces, etc. The cordage may be used in weaving or braiding fire-hose coverings which will not be subjected to mildew and water rot. The processes also cover new methods of making shoe soles, one of cotton or other vegetable fibers and the other utilizing waste leather and reconstructing it to give as good wear as real leather. In fact there seems hardly a product into which leather or woven fabrics enter which may not find use for these new processes.

The above relates only to unweaved fabric which contains no twisted threads or cords nor woven goods. The processes covering the use of cords and threads cannot be explained in detail at this time, but it may be said that it is possible to place cords or threads in any predetermined design combined with the fiber sheets or without the fiber sheets and at less cost than woven goods can be produced. In this process the rubberizing



ARTIFICIAL LEATHER BACKED WITH UNWAVED FABRIC.

is not considered in comparison, inasmuch as all such fabric must be rubberized and the same methods now in use are employed.

Consideration of the known weaknesses of woven fabric, especially with regard to the bending strain when it is brought under tensile strain, seem to make an unweaved fabric, which may be used in the same manner as woven fabric, especially desirable. Moreover, the use of straight cord or thread in a square yard of fabric would allow the employment of approximately 25 per cent additional threads in each direction as compared with woven goods in which the thread or cords must bend to one-half circle every other thread. The fact that any strain on straight cords must be entirely tensile on each thread and will not have the bending strain that occurs in woven fabrics should be in favor of the straight-line thread or cord fabric.

These processes also cover a matted thread or cord unweaved fabric in which no straight lines appear but which is entirely made up of overlapping curves in predetermined matted design and the fabric may be made to be used in the construction of a tire, the exact width required for each size, without cutting at angles, lengthwise of the fabric, and such fabric may be made rapidly and economically in any tire factory with very little additional cost in equipment. This construction gives extraordinary strength and resiliency and may be produced for less than the cost at which woven goods can be made and sold.

Another process covers a fabric of entirely new construction, unlike any fabric now known, and which will make a super-tire. Threads or cords are employed and the fabric may be made in any rubber factory by the addition of inexpensive machinery.

All the processes require very few special machines, and such as may be required are simple adaptations of machinery now in use for other purposes.

Matters of this kind which may become important to the entire industry are of general interest as affording great possibilities through future development. It is of interest to know that the

inventor intends offering his processes to the trade under royalty, as he does not contemplate engaging in manufacturing the products.

USEFUL HINTS FOR THE RUBBER LABORATORY.

By D. Repony.

ACETONE. Directly after acetone has been received it should be redistilled and afterwards kept in a tin can or dark-colored bottle, otherwise it becomes oxidized when exposed to the light and will leave residue upon evaporation, which will give false results by acetone extraction.

EVAPORATING GASOLINE. As directed by the Underwriters' specifications for gasoline hose, the gasoline from hose immersion should be evaporated to dryness, which is difficult, due to the high boiling series. This is, however, easily accomplished by blowing compressed air over the gasoline surface. Should the volatilization required be greatly accelerated, introduce at a convenient place in the rubber tubing a piece of metal piping and heat this portion with a gas burner. The heated air volatilizes the gasoline rapidly.

RUBBER SAMPLES. The rubber sample for alcoholic potash extraction should be ground to small particles. When the sample is cut by scissors the large pieces require long boiling for complete extraction, and this is especially the case in such rubber compounds as contain but a low percentage of fatty substitute.

SCORCHED RUBBER. Rubber scorched during mixing or calendering can be recognized upon immersing in gasoline, where it will swell considerably, but will not paste in uniform colloidal cement.

THE BEST SOLVENT. Boiling kerosene is by far the most practicable and cheapest solvent for vulcanized rubber.

CLEANING FLASKS. Flasks after acetone extraction are easily cleaned by first pouring in a few drops of benzol and afterwards a few cubic centimeters of crude nitric acid. Heat the charge on steam bath and then wash it out with water.

DISTINGUISHING RUBBER FROM BALATA. To distinguish with accuracy whether the belting in question is rubber or balata, immerse one ply in chloroform. Balata will paste in solution, and float on the surface, while rubber will swell considerably but will not paste in solution.

PAINT FOR HOODS. Metal or wooden hoods, or exhaust pipes which come in contact with acid fumes, are best preserved by being occasionally painted by asphalt benzol solution.

ANALYTICAL BALANCES. The vibration of a building, influencing the proper action of an analytical balance is avoided by placing a glass plate on sponge rubber legs. The glass plate should be considerably longer so that the legs of the balance rest about 5 inches from the sponge rubber legs toward the center.

TACKY RUBBER. To prevent tacky rubber from sticking to the extraction thimble, remove the wet sample directly after the acetone extraction, and dry it on a weighed watch glass.

CARBON DISULPHIDE. Carbon disulphide employed for quantitative extraction, should be freshly redistilled and the extraction should be performed by night, if possible.

CASTOR OIL. Castor oil, comparative with all other oils, has a very slight effect upon rubber, therefore it is best employed as a lubricant for such parts as are in connection with rubber.

LABORATORY TUBING. The most durable rubber tubing for laboratory use is of a rubber compound that contains a high percentage of paraffin and asphalt with the lowest possible content of free sulphur.

"THE POWER A MAN PUTS INTO SAVING MEASURES THE POWER of the man in everything he undertakes."—(Frank A. Vanderlip.) Buy W. S. S.

What the Rubber Chemists Are Doing.

EFFECT OF CERTAIN ACCELERATORS UPON THE PROPERTIES OF VULCANIZED RUBBER.

At the meeting of the New Jersey Chemical Society in Newark, January 13, 1919, a paper on the "Effect of Certain Accelerators Upon the Properties of Vulcanized Rubber," by George D. Kratz and A. H. Flower, was read by the former. The main features of this paper and the authors' conclusions are given in the following extended quotations:

INFLUENCE OF ACCELERATORS.

The results recorded were obtained in the course of several investigations to determine the relative activity of certain inorganic and organic accelerators, and the permissibility in the use of the sulphur coefficient in evaluating samples of vulcanized rubber known to contain accelerators. This has consisted of: (a) a comparison of the relative effects of heavy calcined magnesia and an (unidentified) organic accelerator in a mixture containing only rubber and sulphur, and (b) a comparison of the effect of larger amounts of heavy calcined magnesia, light magnesia and lime in a mixture which contained an excess of zinc oxide.

Irrespective of the effect of accelerators upon the physical properties of the vulcanized mixture, possibly the advantage most often claimed for the organic variety in preference to inorganic substances is that in accelerating vulcanization, the former are much more active than the latter and can be used in small amounts to replace much larger quantities of litharge, magnesia or lime.

These investigations have not included a comparison of the relative effects of magnesia and *p*-nitroso-dimethyl-aniline. The organic accelerator which we employed in place of the latter substance was found to be far more active, when used in small amount, than were similar quantities of magnesia. Likewise, the physical properties of the mixtures which contained the organic accelerator were shown to be superior to those obtained with similar amounts of magnesia.

When the load required to effect a given extension is taken as a measure of the physical properties, we have found a marked decrease in the extension of the vulcanized mixture to be true for small amounts of magnesia; certain organic accelerators, however, were found to increase the extension. Under these circumstances, entirely erroneous results were obtained when two series of mixtures, one of which contained small amounts of magnesia and the other similar amounts of a strong accelerator, were tested by this method. Comparisons made on the basis of the loads required to effect a given extension are less reliable than those obtained by comparing the tensile strength and percentage elongation at break. In this instance the sulphur coefficient may be said to afford a fair index of the state of cure as measured by the physical properties of mixtures known to contain small amounts of either inorganic or organic accelerators.

This statement, however, was not found to be of general application, and certainly is not true for mixtures which contain larger amounts of inorganic accelerators in the presence of an excess of zinc oxide. We find that large amounts of zinc oxide effect a slight and limited increase in the rate of vulcanization (sulphur coefficient).

Contrary to what might be expected, we have found that mixtures which contained fairly large quantities of both magnesia and zinc oxide, when vulcanized to maximum physical properties, had lower sulphur coefficients than a control mixture which was vulcanized to the same degree without the assistance of an accelerator. The substitution of lime for magnesia in such a mixture, however, was found to produce quite a different effect. With lime, after an initial decrease in the sulphur coefficient, the latter value was found to respond to a further increase in the amount of the accelerator. This difference in the action of the two substances would indicate that their function in the mixture is not identical.

Our results with heavy mineralized mixtures have shown that such mixtures are not only subject to misinterpretation, but the constituents of the mixtures tend to obscure or mask the individual properties of the rubber used.

INDICATION OF SULPHUR COEFFICIENT.

Fundamentally, the purpose of any ordinary vulcanization is to obtain the maximum physical properties which the mixture will retain unimpaired over the longest period of time under the conditions to which it will be subjected. This physical condition

may be largely independent of the sulphur coefficient, particularly if the mixture has been vulcanized with the assistance of an accelerator. Generally speaking, we have found that the sulphur coefficient does not afford a reliable indication of the physical properties of a vulcanized rubber mixture or that it can be taken as a measure of the state of cure except possibly in the case of mixtures which consist of rubber and sulphur only. We agree with Stevens, however, that for *Hevea* rubber practically all mixtures with a sulphur coefficient in excess of 3.2 will be subject to rapid deterioration.

In a former paper¹ we have given the limits for the vulcanization coefficient of *Hevea* rubber at 1.7 to 2.8. Under standardized conditions, the higher figure has been found to be consistently approximated by mixtures vulcanized without the aid of an accelerator, or with the assistance of one which is only mildly active. The lower figure has been found to apply for mixtures vulcanized with the assistance of even small amounts of powerful organic accelerators or larger amounts of magnesia. The anomaly found to exist between the action of magnesia and lime, however, indicates that a certain amount of reservation should be made in interpreting the coefficients of mixtures which contain either of these substances.

In view of our results as a whole, while we agree with Stevens that the sulphur coefficient is most important as an indication of the ultimate stability of the product, in general practice it should be considered as an indication only. Even in the case of mixtures composed solely of rubber and sulphur, we have found it dangerous to evaluate between them on the strength of their sulphur coefficients alone, unless the past histories of the samples in question are definitely known. As stated by Stevens, the true value of a product, as expressed by its state of cure, is obtained from physical and chemical tests only when they have been made after a definite period of aging conducted under carefully standardized conditions.

EXPERIMENTAL RESULTS.

TABLE I.

Accelerator Used.	Per Cent Accelerator.	Sulphur Coefficient.	Load in lb. per Sq. Mm. Extended 1 to 4 %.	Tensile Strength per Sq. Mm. (at Break).	Per Cent Elongation at Break.
Heavy calcined magnesia.	0.00	0.684	163	181	962
	0.16	1.012	161	186	937
	0.25	1.287	501	774	950
	0.75	1.873	633	766	912
	1.00	1.724	886	914	900
	1.25	1.821	883	1002	918
Accelerator "A."	0.00	0.684	163	181	962
	0.10	1.302	402	621	925
	0.25	1.609	630	879	909
	0.50	2.079	678	1153	975*
	0.75	2.247	664	1170*	1025*
	1.00	3.2518	636	1260	1037*
	1.25	3.004	642	1223	1087

In the case of mixtures vulcanized with the assistance of "Accelerator A," it is evident from the figures obtained for the percentage elongation at break that this property increased proportionately with the tensile strength; with magnesia, on the contrary, tensile strength was increased at the expense of elongation.

This difference in the effect produced in the percentage elongation by small amounts of accelerators prohibits the use of the load required to effect a given extension as a measure of the physical properties of the two series of mixtures. As the percentage elongation of a mixture is increased by the action of an organic accelerator or otherwise, unless this is accompanied by a corresponding and uniform increase in the tensile strength, a given extension will be effected by a lesser load than would normally be required. This was roughly found to be true with "Accelerator A." On the other hand, when the tensile strength is increased at the expense of elongation, as was found to be the case with magnesia, it will require an excessive load to effect the same extension. This decrease in the percentage elongation of mixtures which contained small amounts of magnesia was so marked that, with one per cent of this substance, an extension

¹Journal of Industrial and Engineering Chemistry," 11, 1919, page 30.

*These samples were pinched through by the clamps of the testing machine before the point of rupture, or break, was reached. Consequently, the results for tensile strength and elongation at break are low.

of 1 to 9 was produced only by a load just short of that required to produce rupture or break.

TABLE II.

Accelerator Used.	Mixture.	Per Cent. Accelerator on Rubber.				
		0	5	10	15	
Heavy calcined magnesia.	First latex.....	100	100	100	100	
	Zinc oxide.....	100	92	83	71	
	Heavy calcined magnesia.....	5	5	10	15	
	Sulphur.....	5	5	5	5	
Light magnesia.	First latex.....	100	100	100	100	
	Zinc oxide.....	100	90	80	70	
	Light magnesias.....	5	5	10	15	
	Sulphur.....	5	5	5	5	
Lime.	First latex.....	100	100	100	100	
	Zinc oxide.....	87	75	62	62	
	Lime.....	5	10	15	15	
	Sulphur.....	5	5	5	5	

TABLE III.

Accelerator (Used)	Per Cent. Accelerator on Rubber.	Time in Minutes for Technical Cure at 298° F.	Tensile Strength at Break, Sg. Mm.	Elonga- tion at Break, Per Cent.	Sulphur Coefficient.
Control.	1	120	1,341	725	3.975
	5	90	1,553	710	3.569
	10	75	1,607	675	1.723
	15	45	1,492	675	1.723
Lime.	5	60	1,320	720	2.285
	10	45	1,475	730	1.484
	15	40	1,359	710	1.484
	20	40	1,359	710	1.484
Lime.	5	60	1,294	720	2.990
	10	45	1,365	720	2.990
	15	40	1,512	730	2.990
	20	40	1,512	730	2.990

In the second experiment where much larger amounts of inorganic accelerators were employed, it was desired that the effect of the accelerator as a filler should be minimized to the greatest possible extent. This was accomplished by employing mixtures which contained zinc oxide in such an excess that from 5 to 15 per cent of an inorganic accelerator could be included in the mixture, by replacement of a similar volume of zinc oxide, without decreasing the effect, or function, of the latter substance (Table II). The sulphur content of the various mixtures was also cut down from 11 to 5 per cent, calculated upon the rubber. In this instance, and unlike the preceding experiments, the mixtures were vulcanized to maximum physical properties and their respective sulphur coefficients determined at this point. Portions of each of the mixtures were vulcanized in a platen press at 50 pounds steam pressure (298 degrees F.) over a wide range of times and the correct cure determined as the point of coincident maximum tensile strength and percentage elongation (technical cure). The sulphur coefficient of each mixture when vulcanized to this degree was then determined (Column 6, Table III).

The results obtained show that, for all three accelerators used, the best physical properties were obtained with about ten per cent of each in the mixture. The effects produced by light magnesia, heavy calcined magnesia, and lime ranked in the order named. These differences, however, were small enough to be accounted for in the value of each of these substances as a filling material. However, it is evident that the value of these accelerators as filling materials is of limited extent, because, when present in larger amount (15 per cent), in each case the vulcanized mixtures showed inferior physical properties (Columns 4 and 5, Table III). Moreover, the sulphur coefficients of the various mixtures were found not to reflect, or be a measure of, their physical properties. With both varieties of magnesia, the mixtures which contained 10 per cent of these substances were found to have lower sulphur coefficients than the mixtures which contained but 5 per cent, and the latter had lower coefficients than the control which was vulcanized without the assistance of an accelerator. On the other hand, the results obtained with lime were remarkable in that with 5 per cent of this substance, a much lower sulphur coefficient was obtained than in the case of the control, while with 10 per cent, contrary to the results obtained with magnesia, the sulphur coefficient was increased almost to that of the control.

In explanation of the results with magnesia, we have consistently found that mixtures vulcanized quickly to maximum physical properties with the assistance of accelerators invariably show lower sulphur coefficients than similar mixtures also vulcanized to maximum physical properties, but without the assistance of an accelerator. Frequently, much higher physical values are developed by those mixtures which contain accelerators. The same is true in lesser extent when a short period of vulcanization is effected by the use of higher temperatures. It is at least

indicated that the time required to effect the cure of a given mixture is reflected both in its sulphur coefficient and physical properties.

CONCLUSIONS.

The physical properties of vulcanized rubber mixtures are more fully expressed in terms of the tensile strength and elongation at break than by the load required to effect an extension of 1 to 9.

When used in small amount magnesia is less active in accelerating vulcanization than certain organic accelerators, and it does not impart to the mixtures the physical improvement characteristic of the latter substances.

With mixtures which contain even small amounts of either inorganic or organic accelerators, no direct relationship exists between the sulphur coefficient and the state of cure as measured by the physical properties of the mixture.

When mixtures are vulcanized quickly, with the assistance of inorganic accelerators, the correct state of cure, as reflected by their physical properties, is obtained at abnormally low sulphur coefficients.

COLLOIDS AND RUBBER.

At a recent meeting of the Society of Chemical Industry at the University of Birmingham, Dr. D. T. Twiss spoke on the properties of the colloidal state as exhibited by rubber. The following outline is condensed from the report published by "The India-Rubber Journal," January 4, 1919, page 6.

Rubber is so completely and typically colloidal that it is difficult to decide what details should be selected in order to give briefly a general indication of its colloidal character.

Natural rubber made its first appearance in a condition which might be described as doubly colloidal. Rubber latex is a milky fluid containing minute globules of a colloid, probably rubber itself in a state of colloidal suspension in an aqueous fluid or serum. These rubber globules are microscopic in size and show a distinct Brownian movement. Rubber latex is a negative suspensoid and the precipitation of rubber from *Hevea* latex exhibits analogies to the precipitation of such substances as clay or arsenious sulphide from colloidal aqueous suspension. The precipitation of negative suspensoids such as these is greatly accelerated by the addition of acids. Most of the rubber produced to-day is separated from its latex by the addition of small quantities of acetic acid.

Alkalies increase the stability of negative suspensoids, including rubber latex. Also the presence of an additional colloidal or emulsoid substance can increase the stability of the suspensoid.

Masticated raw rubber immersed in a solvent slowly absorbs the latter and swells enormously, finally yielding a colloidal solution of high viscosity. Some solvents, such as carbon disulphide, chloroform and benzene, yield almost transparent clear solutions, while others such as shale naphtha, petroleum ether and ordinary ether, yield solutions of milky appearance. Although rubber latex is closely comparable with the ordinary suspensoid colloids, rubber itself is an emulsoid. Emulsoids are, as a rule, more viscous than suspensoids, and the proportion of dispersed substance to medium is often higher.

Raw rubber may be considered as a fairly extreme case in which the rubber hydrocarbon is in a fine state of dispersion throughout a medium, probably consisting in part of the protein matter from the latex. As rubber freed from protein matter still retains its typical consistency, the emulsoid state must be attributed mainly to the presence of rubber in at least two forms of different molecular weight, or of different molecular condition, the rubber thus supplying not only its disperse phase, but also its own dispersion medium. Other peculiarities in the behavior of rubber confirm this lack of uniformity.

One of the greatest obstacles in the way of the production of synthetic rubber is the colloidal nature of the material. The problem is not merely to produce a substance of known molecular weight and structure, because the required material is of undetermined molecular magnitude and less desirable in a pure condition than when containing so-called impurities.

CHEMICAL PATENTS. THE UNITED STATES.

PUNCTURE-HEALING COMPOSITION. A puncture-healing compound including beeswax 1 ounce, paraffine 2 ounces, rosin $\frac{2\frac{1}{2}}$ ounces, linseed oil $\frac{1}{2}$ -ounce, ground cork 2 ounces, and disintegrated asbestos 2 ounces. (Marie R. Weaver and Hermann Clemens, assignors of one-half to Otto Weydemeyer—all of El Paso, Texas. United States patent No. 1,299,273.)

THE DOMINION OF CANADA.

RUBBER SUBSTITUTE. Process and product for a rubber-like substance comprising a mixture of fixed oil, sulphur, and zinc oxide, substantially free from air and moisture, having been subjected to heat, pressure and agitation until the nascent period of the elements reacting has ceased. (Harry H. Hazeltine and Morton Gregory, both of Tacoma, Washington, U. S. A. Canadian patent No. 189,232.)

RUBBER VULCANIZATION. An accelerator for the vulcanization of rubber and similar materials, consisting of a solution of sodium or potassium in aniline or of potassium in diaphenylamine or toluidine. (The Dunlop Rubber Co., Limited, Westminster, London, assignee of Douglass Frank Twiss, Sutton, Coldfield, Warwick—both in England. Canadian patent No. 190,042.)

PROCESS AND PRODUCT OF VULCANIZING RUBBER.—A PROCESS for treating rubber or similar material which comprises subjecting the rubber to a vulcanizing agent comprising a nitro-derivative of anthracene (beta-dinitroanthraquinone.) (The Canadian Consolidated Rubber Co., Limited, Montreal, Que., assignee of W. A. Gibbons, Flushing, N. Y., U. S. A. Canadian patent No. 190,352.)

RUBBER COMPOSITION. A mixture of 60 parts of rubber, 14 parts of golden antimony sulphide, and 16 parts of asbestos or mica is used for electric insulation of cables and wires, for packing glands, etc. (F. H. Bloomfield, 76 St. John's Park, Blackheath, London, British patent No. 122,310.)

THE UNITED KINGDOM.

PACKING. Joint-making rings are composed of a corrugated metal core covered with asbestos, india rubber, etc., which may be secured by vulcanization and a wrapping material, and in some cases coated with graphite. (S. A. Copeland, 24 Essex Gardens, and C. G. Alexander, 125 Rectory Road, both of Essex-head, and J. Taylor, Dunford & Co., 12 Dean street, Newcastle-on-Tyne—both in England. British patent No. 122,724.)

PLASTIC COMPOSITION. A composition resembling rubber is obtained by heating fish scrap or fish oil with sulphur, afterwards heating the product under pressure. The mixture is heated first to 175 degrees C. Afterward the temperature is raised to 220 degrees C. over a period of one to two hours. The plastic mass so obtained is mixed with more sulphur, lead oxide is added to accelerate the reaction, and the whole heated at 155 degrees C. under pressure of 20 to 40 pounds per square inch for $\frac{1}{2}$ to 1 hour. The product may be used as rubber substitute or may be compounded with rubber. (M. Gregory, 2113 North Anderson street, Tacoma, Washington, U. S. A. British patent No. 123,114.)

PLASTIC COMPOSITION. Waste cork sawdust and pieces of cork, with or without refuse of tan or wood fiber, are made into a composition by addition of a mixture of alum, crude shellac, gum arabic, gutta percha, carbon bisulphide and methylated spirits. A specified composition is: alum, 4 ounces; carbon bisulphide, 1 pint; crude shellac, 8 ounces; gutta percha, 8 ounces; methylated spirits, 1 pint, combined with a proportion of the specified fibrous material. (E. Wood, 7 Sunny Terrace, Granville Road, Weymouth, Dorsetshire. British patent No. 123,285.)

IMPREGNATED TEXTILE BELTING. Textile belting is impregnated with linseed oil, asphalt, balata, etc., freed from hygroscopic substances and dried by a continuous operation. The belts are

dried by heating under reduced pressure. The solvent is passed with the steam into a condenser and recovered. (E. C. R. Marks, 57 Lincoln's Inn Fields, London. British patent No. 123,502.)

LABORATORY APPARATUS. CONVENIENT WALL CLAMP.

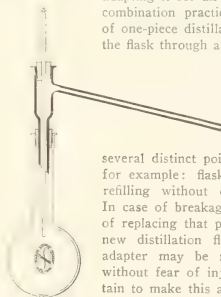
A VERY useful wall clamp adapted for supporting such objects as maps, charts, drawings, blue-prints, fabrics, writing pads, etc., on a wall surface is shown in the annexed cut and called a "Kling-Klamp." It consists of a reversible cam to accommodate either thick or thin objects, which grips the object in proportion to its weight. The range of usefulness of this simple and inexpensive device is practically unlimited. It will be particularly appreciated by the works chemist in his office, laboratory and testing rooms. (Standard Scientific Co., 70 Fifth avenue, New York City.)



KLING-KLAMPS.

DISTILLATION ADAPTER.

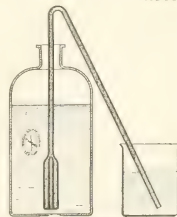
The accompanying cut illustrates the H-J distillation adapter which presents certain distinct practical advantages worthy of note. It can be readily attached to any ordinary flask, thereby adapting it for all purposes of distillation. This combination practically replaces the usual form of one-piece distillation flask. It is connected to the flask through a rubber or cork stopper, forming a tight but non-rigid joint, thus greatly lessening the liability to injury when used.



H-J DISTILLATION ADAPTER.

The separability of the adapter and flask presents several distinct points of value and convenience, for example: flasks may be easily removed for refilling without disturbing other connections. In case of breakage of flask or adapter the cost of replacing that part is less than the cost of a new distillation flask. When not in use the adapter may be removed to a suitable place without fear of injury. These features are certain to make this adapter popular in laboratories where distillation flasks are much in use. (Standard Scientific Co., 70 Fifth avenue, New York City.)

AUTOMATIC SIPHON.



STANSIPHON.

A series of practical automatic siphons covering the usual laboratory and factory requirements has been perfected as shown in the cut. These siphons are made in glass, hard rubber, and a variety of metals, according to the liquid to be used. The various models are classified as automatic or self-starting; bulb pressure attachment; bulb lift and gravity pressure, and piston pressure. (Standard Scientific Co., 70 Fifth Avenue, New York City.)

CANADIAN INSTITUTE OF CHEMISTRY.

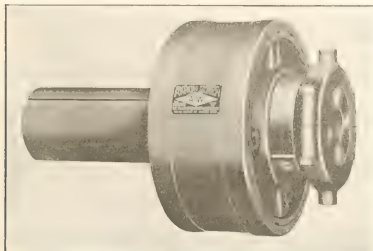
The Canadian Institute of Chemistry was organized with 28 members at the Canadian Chemists' Convention held in Montreal, Quebec, May 17, 1919. Three classes of membership are provided for. At the first session Dr. W. L. Goodwin, of the Kingston School of Mines, presided. Among the Montreal industrial plants visited by the members of the Institute was that of the Canadian Consolidated Rubber Co., Limited.

New Machines and Appliances.

THE "AKRON" FRICTION CLUTCH.

WHILE the principle of this clutch is not new, it is of interest to the rubber trade, due to the refinements of design and construction necessary to meet the demands of a reliable power-transmitting device. Its simplicity and durability make it of special advantage for rubber machinery, and particularly so when used on tire-building machines.

There is only one point to adjust, and the adjusting screw is always accessible. The clutch can be quickly adjusted to slip, when a given load is exceeded, thereby avoiding wrecking other



FRICTION CLUTCH FOR TIRE-BUILDING MACHINES.

parts of the power transmission. It takes hold slowly, reduces shock, and consequently lengthens the life of the machinery. The pulley is not a part of the clutch and is easily interchangeable. The friction parts are all of metal and run in oil; consequently, the wear on these parts is reduced to a minimum. As all working parts are enclosed in a metal case, and there are no toggle arms, levers, or other traps to fan the air and endanger operatives, it can be run at high speed with perfect safety. Made in all sizes from $\frac{3}{4}$ -h. p. at 100 r. p. m., and up. (The Williams Foundry & Machine Co., Akron, Ohio.)

THE PFAUDLER UTILITY POT.

For small-scale manufacture and laboratory practice, rubber chemists will be interested in the acid-resisting glass-enameled utility pot shown in the illustration.



PFAUDLER UTILITY POT.

The vessel is made with an outer jacket and its inside dimensions are: diameter 18 inches; depth 25 inches; capacity 26 gallons. It is convenient to handle, easily moved, may be raised, or lowered in temperature, and is very effective in resisting acids or alkalis. (The Pfaudler Co., Rochester, New York.)

TASGON AND TAR-GON.

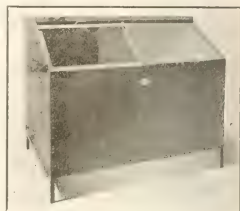
Two new specialties that are recommended to car-users are Tasgon and Tar-gon. Fittings that are rusted, corroded, or otherwise stuck fast may be easily removed after applying a few drops of the former. The latter removes tar, asphalt, grease and stains from automobile bodies, mud-guards, and tires. (Polygon Products Co., 141 Milk street, Boston, Massachusetts.)

STEEL TABLES AND DRY COMPOUND BINS.

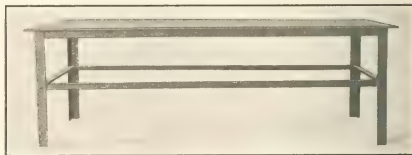
The progressive rubber manufacturer will be interested in the line of steel factory equipment here illustrated. It comprises tables, compound bins, and other factory furniture. The first cost of such equipment is practically the final cost. There is little depreciation and low insurance rate.

The dry compound bins, built in double compartment units, meet in every way the most stringent requirements for dry compound storage. Each compartment has its own cover for the protection of the contents by excluding accidental impurities.

The all-steel tables are perfectly adapted for holding warm or soft batches for cooling or keeping free from damage by contact with splinters of wood,



DRY COMPOUND BIN.

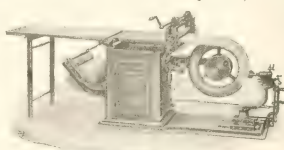


COOLING TABLE.

which are an annoying cause of trouble wherever wooden equipment is used in a rubber mill. (Charles W. Carll's Sons, Trenton, New Jersey.)

KREMER TIRE-BUILDING MACHINE.

This machine is especially designed with the view of reproducing all the essential features employed in producing a hand-made tire in a machine-made product, advantages that will be



KREMER'S TIRE BUILDER.

readily appreciated by any one familiar with the art of machine tire construction. A fabric tension device is employed that will insure uniform stretch to all the different plies of fabric alike, the desired percentage of stretch being determined at will by the operator.

The core-supporting arm rotates on its axis, whereby the core can be made to assume either a vertical or a horizontal position without affecting the rotation of the core. This feature greatly facilitates the setting of the beads, as with his arrangement the bead-setting rings are entirely eliminated.

In this machine a single spinning head is employed which stitches down the fabric in a manner similar to that of the hand-

made tire, with the result that there is no distortion of the fabric at the points where the fabric is overlapped or spliced. This difficulty frequently occurs when both sides of the carcass are spun down at the same time and in the same direction from the median line of the core.

Briefly, the operation of the machine is as follows. After the fabric has been fed to the core, the latter is rotated forward at a fast speed and the spinner held against that side of the fabric in which the warp threads extend diagonally rearward, relative to the direction of movement of the core. When one side of the fabric has been spun down, thus maintaining the proper position and tension of the warp threads, the core is stopped, the treadle depressed to unlock the core-holding arm, which is then rotated to bring the opposite side of the core into position to be engaged by the spinner. The lever handle is then operated so as to reverse the rotation of the core, and the remaining side of the fabric is thus spun down in the proper way, to preserve or produce the necessary tension on the warp threads. (F. W. Kremer, Rutherford, New Jersey.)

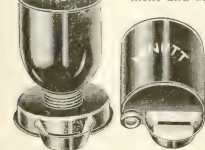
NON-EXPLOSIVE SAFETY CEMENT CANS.

Rubber cement is used to join together the seams of rubber footwear, clothing, hot-water bags and toys, and in the manufacture of tires, tubes, and many other rubber articles. The fumes of the solvents used in the manufacture of cements contaminate the air to the injury of the workers, and often result in serious explosions, unless carefully guarded.



SAFETY BENCH CAN.

As examples of what has been accomplished to overcome these difficulties, three types of safety bench cans for rubber cement or gasoline are presented in the accompanying illustrations. The bench can with a removable cover is provided with a float valve which rests on the gasoline or rubber cement and allows the operator to use a light brush where a small quantity is desired. When the float is pressed down slightly the liquid is automatically forced up through the fine screen and flows back through the screen when the pressure is released. There is no danger from explosion in a can of this construction, which has the additional feature of economy in the use of gasoline. This type of can may be used for any volatile liquid in rubber mills or repair shops.



UPRIGHT AND HORIZONTAL TYPES.

The two smaller cuts illustrating, respectively, the upright and horizontal types of rubber cement pots constructed after the fashion of drinking vessels for poultry, permit only a small quantity of cement or gasoline to stand in the brush receptacle, thus minimizing the escape of fumes into the atmosphere. (McNutt Can Sales Co., Inc., 254 Church street, New York City.)

A NEW METHOD OF EXTINGUISHING FIRES.

When fires occur in chemicals, acids, or oils, they are usually marked by extremely high temperatures; so high, in fact, that water, even where it can be made to stay on the surface of the

fire, is unable to extinguish it by cooling, as it is immediately vaporized by the heat and the vapor blown away by the wind or sucked away by the draft of the fire itself. But in most cases the water, being heavier than the liquid, sinks to



FIREFOAM ENGINE.



HAND EXTINGUISHER.

the bottom, where it can do no good. In fact, it usually does harm, as it spreads the burning liquids over a larger area.

The method here described utilizes the well-known smothering ability of carbonic-acid gas. But in this method the gas is not left free to be blown away, but is held on the surface of the burning substance in the form of very minute bubbles in which the carbonic-acid gas is confined. This mass is said to be an almost perfect non-conductor of heat. It is lighter than liquids and, consequently, floats on them. If spread entirely over the surface it must cut off the supply of oxygen completely and quickly smother the blaze. When applied to solid substances it coats the surface and kills the fire by preventing air from reaching it. (Foamite Firefoam Co., 200 Fifth avenue, New York City.)

PORTABLE AIR COMPRESSORS FOR TIRES.

This new outfit consists of a one-half horse-power electric air compressor, having a capacity of two cubic feet of free air per minute, together with a cylindrical pressed steel reservoir, 14 inches



PORTABLE AIR PUMP.

by 30 inches, mounted on three wheels and provided with a handle, so that the whole can be wheeled about as circumstances require. The reservoir holds sufficient air at one filling to inflate five average tires from flat to full pressure or ten tires from 40 to 80 pounds. The outfit is complete with switch, electric cable, attachment plug, pressure gage, safety valve, 25 feet of hose, tire connector, and all necessary piping and wiring. The motor operates on alternating current of 60 cycles or less and direct current. The motor, gear train and compressor are enclosed in one housing. The motor and compressor are cooled by forced circulation of air through this common housing, and the motor, gears and compressor, including cylinder walls and piston, are grease-lubricated. (Black & Decker Manufacturing Co., Baltimore, Maryland.)

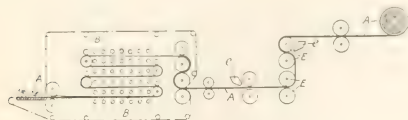
MACHINERY PATENTS.

COMPRESSED ASBESTOS SHEET PACKING.

DUE to the elimination of German competition, the manufacture of asbestos sheet packing of the Klingerite type is becoming an important division of rubber goods manufacture.

The process here illustrated relates to the continuous manufacture of joint-making material and consists in applying to one or both faces a surfacing material of finer quality or of different color.

The material A formed from a plastic composition of rubber and asbestos compressed and dried in any manner, such as between endless bands B as described in British patent No. 121,772, receives surfacing material from a hopper *e* on one or both faces and passes to calendering rolls *E* which may be heated to drive off solvent.

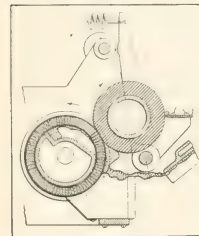


MACHINE FOR MAKING ASBESTOS PACKING.

From the calender, the sheet passes between presser rollers and is wound up on the roller *A* shown at the right of the illustration. (Potter's Asbestos Co. and A. E. Stafford, Rochdale, Lancashire, England. British patent No. 121,904.)

CHICLE GUM-STRAINING MACHINE.

In the operation of this machine the melted chicle containing the foreign matter flows in a continuous viscous stream from the chute down onto the surface of the rotating cylinder and is carried thereby under the rubber roller, the pressure of which squeezes the gum through the screen and perforations into the interior of the cylinder.



CHICLE STRAINER.

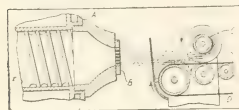
From the interior of the cylinder the gum is gathered by a spiral scraper and caused to flow out of the open end of the cylinder through a hole in the plate, to the discharge spout.

The cylinder and scraper are heated to the required degree to facilitate this flow of the gum without heating it too hot. The impurities in the gum are not forced through the screen into

by the comparatively cold and more sticky yielding surface of the rubber roller and carried thereby until they are collected from the surface of the roller by the scraper at the top. (Karl E. Feiler, assignor of one-ninth to himself, two-ninths to William A. Lorenz, both of Hartford, Connecticut; and six-ninths to Beechnut Packing Co., Canajoharie, New York. United States patent No. 1,296,112. See United States patent No. 1,296,096.)

MACHINE FOR MAKING RUBBER STOCK.

Rubber stock may be built up of laminated strips, and entrapped fluids removed by this process. The machine illustrated is designed to produce solid tire stock, and comprises an ordinary tubing machine *A* provided with a laminating die *B* through which the separated strips are forced and conveyed between compression rollers *C* and *D*.



SOLID-TIRE-STOCK MACHINE.

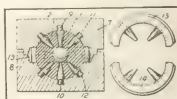
Pressure being applied to the mass in the tubes

when the strips are extruded through the die into a region of lower pressure, the gases are excluded. Furthermore, as the strips pass between the compression rollers, any remaining gas-pockets are broken and all hollows are flattened out so that the stock leaves the rolls free of pockets and entrapped fluids.

(Thomas P. Little, assignor to The Fisk Rubber Co., both of Chicopee Falls, Massachusetts. United States patent No. 1,297,482.)

MAKING GOLF BALLS.

This patent relates to apparatus for molding elastic material and particularly golf or like balls of the form described in British patent specification No. 120,658. The mold sections 7, 8, 13, 14 are provided with tapering radial pins 9 .. 14 which converge to a common center and are symmetrically disposed. Some of the pins may be long enough to support a hard core (1) to be embedded in the material (2) of the ball. In the construction shown, the mold consists of four sections, two (13, 14) of which form the equatorial part of the ball. When molded, the material is drawn off the pins, and the ball is completed as described in the above-mentioned specification. The mold may be used for a rubber composition, which is vulcanized therein, or for a composition which can be poured into the mold and allowed to set. (W. J. Mellersh-Jackson, 28 Southampton Buildings, London. [Revere Rubber Co., 59 Reade street, New York City.] British patent No. 121,239.)



GOLF-BALL MOLD

OTHER MACHINERY PATENTS.

THE UNITED STATES.

- N. O. 1,297,535. Retread vulcanizer. P. H. Wilkinson, San Bernardino, Calif.
 1,298,124. Tire-lapping machine. W. C. Tyler, Racine, Wis., assignor to The Goodyear Tire & Rubber Co., Akron, O.
 1,298,612. Repair vulcanizer. C. G. White, Santa Barbara, assignor of 1/2 to G. F. White, Santa Cruz County, and 1/2 to W. E. Mouck, Santa Barbara County—all in California.
 1,298,620. Repair vulcanizer. J. R. Wright, Lebanon, Mo.
 1,298,644. Apparatus for the manufacture of electric cables. C. J. Beaver and E. A. Claremont, County of Chester, England.
 1,298,945. Expandable core for vulcanizing tires. J. P. Smith, assignor to the Firestone Tire & Rubber Co.—both of Akron, O.
 1,299,335. Edge-trimming machine. R. Hazeltine, assignor to The Fisk Rubber Co.—both of Chicopee Falls, Mass.
 1,299,392. Device for stripping laths from boots. J. J. Kramer and H. Smierling, assignors to La Crosse Rubber Mills Co.—all of La Crosse, Wis.
 1,299,456. Apparatus for forming duplicate tire molds. B. Brannville, New York City.
 1,299,487. Machine for shaping tire covers. F. H. Mercer and H. F. H. Blease, Melksham, England.
 1,300,341. Tool-mounting for tire-machines. J. L. Butler, Akron, O., assignor to The B. F. Goodrich Co., New York City.
 1,300,391. Core for tire castings. C. D. Hibbs, Fort Worth, Tex.

THE DOMINION OF CANADA.

- 125,516. Machine for shaping tire covers. F. H. Mercer and H. F. H. Blease, Melksham, England.
 189,960. Tube-wrapping machine. O. E. Heckman, Akron, O., U. S. A.
 189,986. Mold for forming tires. W. D. McNair, Toledo, O., U. S. A.
 190,005. Rubber-coating machine. A. Schwartz, Brookline, Mass., U. S. A.
 190,033. Tire-wrapping machine. The Canadian Consolidated Rubber Co., Limited, Montreal, Que., assignor of C. B. Whitesley, Hartford, Conn., U. S. A.
 190,356. Machine for operating on heels having both leather and rubber parts. The United Shoe Machinery Co. of Canada, Limited, Maisonneuve, Quebec, assignor of J. F. Standish, Wintrop, Mass., U. S. A.

THE UNITED KINGDOM.

- 123,068. Machine for deflating pneumatic tires. H. P. Kraft, 219 Godwin avenue, Ridgewood, N. J., U. S. A. (Not yet accepted.)
 123,136. Apparatus for making solid tires. Henley's Telegraph Works Co., and W. T. and G. Sutton, 13 Blomfield street, London Wall, London, and E. E. Judge, 36 Grange Road, Gravesend.
 123,137. Apparatus for trimming solid tires. Henley's Telegraph Works Co., and W. T. and G. Sutton, 13 Blomfield street, London Wall, London, and E. E. Judge, 36 Grange Road, Gravesend.
 123,138. Apparatus for trimming solid tires. Henley's Telegraph Works Co., and W. T. and G. Sutton, 13 Blomfield street, London Wall, London, and E. E. Judge, 36 Grange Road, Gravesend.
 123,414. Machine for covering wires with plastic material. A. J. Welch, 13 Woodland Terrace, East Charlton, London.
 123,636. Tire mold. L. Hopkinson, 120 Broadway, New York City, U. S. A.

PROCESS PATENTS.

THE DOMINION OF CANADA.

- N. O. 190,045. To manufacture endless inner tubes. The Mercer Tire Co., assignor of H. Dech—both of Trenton, N. J., U. S. A.

New Goods and Specialties.

A TOY MONOPLANE THAT SOARS.

THE interest in airplanes has stimulated the production of toys for the youngsters that shall have some of the characteristics of the real airplane. The one showing in the accompanying illustration, called the "Joy-Toy Soaring Monoplane," will ascend straight into the air for more than 100 feet and spiral back to the feet of the sender. It has wings of tough paper supported by light metal stays on hardwood doweling, and these wings fold up like a fan. A light spring holds them in position when spread. A strong sling or catapult has a broad rubber band with a ring for attaching to the monoplane, and the height to which the plane ascends depends on the power given it by the force exerted on this sling. The small sketches show the means of attaching the



THE JOY-TOY SOARING MONOPLANE.

sling and the position in which the monoplane is held when sending it into the air. The air resistance holds the wings closed until the plane has reached the top of its flight, when they automatically spread open. The direction of the toy can be regulated by adjusting the rudder, which is detachable. (The Evanston Supply Co., 118 North La Salle street, Chicago, Ill.)

A WORK-SHOE WITH RUBBER SOLE.

The tremendous increase in the cost of footwear has opened the way for the popularization of a work-shoe that can be marketed at a reasonable price, and that will give good value for the money paid. A shoe which answers the requirements is illustrated here in so graphic a manner as to require but little further description.

It has an upper of heavy brown canvas, with a lining of lighter duck, a sole of tough rubber, a fiber counter and insole, and a resilient box-toe. The rubber heel is of pneumatic construction, with several specially constructed chambers which draw in and eject air at every step, thus being lighter and more



THE "WORK-SHOE."

resilient than the ordinary rubber heel. The shoe is made on the Munson last, the shape approved by the Government for its

Army shoes, in regular lace, blucher, and scout patterns, for men, boys and youths, women, misses, and children. It is in all a most desirable shoe for the purposes intended. (Hood Rubber Co., Watertown, Massachusetts.)

AN AUTOMATIC INFLATING VALVE.

A new valve for use in garages and service stations is

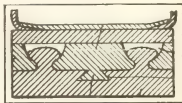


"SCHRADER UNIVERSAL INFLATING VALVE."

covered with rubber to protect it from injury and at the same time prevent it from scratching or injuring the body of the automobile near which it may be used when inflating tires. An automatic feature guards against the escape of compressed air, if for any reason the supply is not cut off when the use of the valve has ceased. This valve is made in four sizes from 5/16-inch to 3/4-inch, and a patent has been applied for on the device. (A. Schrader's Son, Inc., 783-803 Atlantic avenue, Brooklyn, New York.)

DETACHABLE RUBBER HEEL.

A cushion rubber heel made in two layers or bits, on the principle of the mortise-and-tenon joint, is shown in the accompanying sketch. One of the layers



CLARKE RUBBER HEEL.

is permanently attached to the heel of the shoe, and the other, being detachable, is easily replaceable when worn. The two rubber parts may be made of two grades of rubber if desired, the upper one receiving less wear than the tread member. The inventor who has

patented the idea calls attention to the possibility of utilizing it in applying a rubber facing to the sole or a portion of the sole of a shoe. (Walter H. Clarke, Akron, Ohio.)



A WESTERN NON-SKID TIRE.

The tire shown herewith uses a double diamond tread to produce its non-skid feature. This tire is of the clincher type and is a new brand being manufactured by a western concern. It is called the "South Bend" tire. (International India Rubber Corp., South Bend, Indiana.)

A SPONGE RUBBER TIRE FILLER.

A new substitute for the customary pneumatic tube in automobile tires is made of sponge rubber produced by a special process which toughens it to withstand hard wear. The "Rubber Ace," as it is called, is manufactured in different sizes to fit various tires. It is claimed for this tire filler that it will not harden or crumble and will retain its resiliency, while it is not affected by natural heat or cold. The manufacturer guarantees its invention for one year. (Lafayette Rubber Co., 6100 South La Salle street, Chicago, Illinois.)



"RUBBER ACE" TIRE FILLER.

A RUBBER-LINED CASE FOR BOTTLES.

Those who are constantly traveling and require a water-proof case for bottles should be interested in the one illustrated here. It is made in two styles, one of black patent leather and the

other of tan pig goat-skin, lined with a checked water-proofed fabric. The bottles which come with the case are of glass in nickel holders with a removable cap. (Mark Cross, 404 Fifth avenue, New York City.)



RUBBER-LINED BOTTLE-CASE.

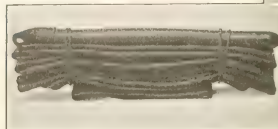
"TEST SPECIAL" RUBBER BELTING.

A new kind of belting for machinery is made of specially woven cotton duck, thoroughly impregnated with rubber, and vulcanized under pressure sufficiently heavy to unite the plies and make the belt impervious to moisture. This type

of belt is also nonstretching, an important feature. (New York Belting & Packing Co., New York City.)

NOVEL HOT-WATER BOTTLE THAT FOLDS.

The needs of the traveler are the incentive that spurs many inventors to new efforts. The latest item of this sort is a folding hot-water bottle with syringe attached, the bottle, tubing, and pipe being made in one piece. The tubing is of soft rubber, and is of the rapid-flow type. The pipe is of semi-hard rubber. (G. S. Andrus, Akron, Ohio.)



FOLDING HOT-WATER BOTTLE AND SYRINGE.

REGENT KEDS—A NEW LINE OF SUMMER FOOTWEAR.

A new line of "Keds" called the "Regent" has recently appeared, designated as of higher grade than the ordinary rubber-soled canvas footwear and priced accordingly. The models are made of white Sea Island duck and have white rubber soles.

prevent the foot from coming in close contact with the latter. The sole is vulcanized to the upper by the pressure-cure process. Half Louis heel pump and 9-inch Bal, rubber lifts on heels; 8-inch Bal, misses' pump, and men's Bal and Oxford, rubber heels.



HALF LOUIS HEEL PUMP.



WOMEN'S 8-INCH BAL.



MISSES' PUMP.



INFANT'S OXFORD.



MEN'S OXFORD.



INFANT'S BOOT.



WOMEN'S 9-INCH BAL.



MEN'S BAL.

The heel varieties are made with a combination steel and fiber shank to support the arch of the foot, and there is a ground cork filling between the fiber insole and the rubber outsole to

The line includes a number of models not shown above, including Oxfords and Bals for men and women and an infant's ankle-strap pump. (The United States Rubber Co., New York City.)

A "MINNOW" BAIT FOR BASS.

For deep-water fishing, especially for bass in mid-summer, in northern lakes, a new "plug" has been devised which sinks and dives and has an active swimming or wiggling movement, en-



THE HEDDON "DEEP-O-DIVER" BAIT.

hanced by a rubber "pork rind" attachment. This bait has a double-hook equipment, weighs only 2/3-ounce, and is 2 1/2 inches long. It is made in four color combinations, one being a red-scale finish. (James Heddon's Sons, Dowagiac, Michigan.)

A NEW SWIMMING GLOVE.

A swimming glove intended to prevent the entrance of water between the glove and the hands of the swimmer, has its outer edge provided with a continuous web formed with a flange which connects, by means of ribs, with the fingers. When the fingers of the hand are spread, the spaces between act like the web of a duck's foot to resist the water and thus offer an effectual means of making progress.

The glove is formed of elastic material, preferably rubber, and the wrist portion has a rubber band at its outer end to prevent the entrance of water. When the fingers are brought together, the resistance to the water is very slight during the return swimming stroke. The glove is easily adjusted. (John W. Eckman, Decatur, Illinois.)

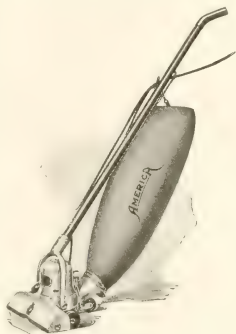


ECKMAN SWIMMING-GLOVE.

VACUUM CLEANER WITH RUBBER BELT.

An electrically driven vacuum cleaner is pictured here, having a 3/4-inch round driving belt of rubber and rubber-tired wheels at front and back. The belt drives the spiral brush direct from a simple and durable large carrier wheel. This brush is divided and by its wide opening, the end vents, and the large center vent, it is possible to clean dust from base-board cracks and pick up pieces of strong and larger articles of rubbish without the inconvenience of getting them wound around the brush. The brush itself is adjustable to suit the special requirements of the surface to be cleaned. This adjustment is facilitated by the special attachments which come with the cleaner.

This motor has a tripe-lever, foot-operated, for starting and stopping. All of the electrical connections are contained in the motor housing and the handle is of non-shock-enamelled wood. This handle can be adjusted and fastened at any desired angle. (The Wise-McClung Manufacturing Co., New Philadelphia, Ohio.)



"AMERICA" CLEANER.

AN ADJUSTABLE CRAVAT.

Dealers in men's furnishings will be interested in a new type of cravat called the "Tieze." The particular feature is the substitution of a strip of elastic webbing for the narrow strip of material which passes around the back of the collar. When a cravat having this elastic insert is put in position to be tied, the elastic permits it to be drawn down and knotted with ease. It can then be released and will adjust itself snugly. Another specialty of novel interest made by the same company is



"TIEZE" CRAVAT.

A WEIGHTED RUBBER SOLE.

One of the disadvantages of the life-saving suits of the modern type is that the heavy metal soles of the feet have no resiliency and possess a tendency to bend beneath the weight of the wearer if he happens to step on some hard object, such as a stone under water.

To overcome this handicap a new sole has been devised, made of rubber heavily compounded with litharge. The inner side is of fabric, like the interior of a rubber boot. This is known as the "High Gravity Sole." The "Dread-naught" safety suit described in our issue of October 1, 1918, is said to be equipped with these weighted rubber soles.

The "High Gravity Sole" and the "Tieze" cravat are the product of the same inventor. (Bull's Eye Rubber Co., 131-135 Harris avenue, Long Island City, New York.)

A TRUCK TIRE THAT WITHSTANDS STRAIN.

A truck tire is represented in the accompanying illustration which is made with base, sub-base, and tread fused in one piece



MCGRAW SOLID TIRE.

by a special process. The channel lips of the base are shorter than in some types of solid tires, but it is claimed by the manufacturer that the bond between the rubber and the steel rim is so strong that a laboratory test in which 100 tons hydraulic pressure were exerted against the unsupported tire-walls failed to dislodge the tread. At the same time, although the tire was much distorted during the test, it regained its normal size and shape when the pressure was removed. (The McGraw Tire & Rubber Co., Cleveland and East Palestine, Ohio.)

BLACK AND WHITE IN COMBINATION.

Nearly all the rubber footwear manufacturers are now producing lines of white rubber, which seem to have caught the fancy of the public. The various standard styles and shapes are being duplicated in white.

A decided novelty in this line, however, is the "Lytton," a lumberman's shoe with white rubber upper, heel, and sole, and black leather top and white celluloid eyelets. The upper and top are attached by four rows of stitching, and the whole forms an article which commends itself by its novelty and attractiveness. (The Canadian Consolidated Rubber Co., Limited, Montreal, Quebec, Canada.)



"LYTTON" LUMBERMAN'S SHOE.

Activities of The Rubber Association of America, Inc.

MEETING OF THE BOARD OF DIRECTORS.

THE QUARTERLY MEETING of the Board of Directors was held at the Union League Club, New York City, May 9, 1919, with the following attendance:

Homér E. Sawyer, president. Directors: Harry T. Dunn, Seneca G. Lewis, John Morgan, John A. Lambert, William J. Kelly, John S. Lowman, Charles J. Davol, C. W. McLaughlin, G. W. Henne. Former presidents: Henry C. Pearson, Frederic C. Hood, George B. Hodgman. Secretary, H. S. Vorhis. Also by special invitation, Colonel H. Stuart Hotchkiss.

It was voted to purchase \$10,000 of Victory Loan notes and to appropriate \$5,000 toward supporting the work of the National Industrial Board, of which the Association is a member.

The following firm and associate members were elected:

FIRM MEMBERS AND REPRESENTATIVES.

The Archer Cord Tire & Rubber Co., W. F. Bigelow, Minneapolis, Minnesota.

Curtis Tire & Rubber Co., Curtis R. Gray, Muskegon, Michigan. Lincoln Highway Tire Co., M. S. Ackles, Fulton, Illinois.

Monarch Rubber Co., G. F. Kline, Canton, Ohio (factory at Hartsville, Ohio).

Semple Rubber Co., C. H. Semple, Trenton, New Jersey. Standard Tire Co., R. J. Firestone, or T. A. Palmer, Wilmoughby, Ohio.

ASSOCIATE MEMBERS.

W. A. Eden, Canadian Consolidated Rubber Co., Limited, Montreal, Quebec, Canada.

The associate membership of E. O. Cummings was transferred to firm membership in the name of W. H. Cummings and Sons, 60 Harrison street, New York City.

ASSOCIATION REPRESENTED AT CHAMBER OF COMMERCE MEETING.

The seventh annual meeting of the Chamber of Commerce of the United States of America held at St. Louis, April 28 to May 1, 1919, brought together 2,500 business leaders from all parts of the country and was one of the most important gatherings of this nature ever held. Among other resolutions, the following that is of particular interest was adopted:

NO. 11—HIGHWAYS.

That highways are an integral part of our nation's system of transportation has been emphasized by the war, and an enormous development is at hand, so important as to require a comprehensive national policy, under which federal appropriations for highways will be applied to national needs for interstate commerce, agriculture, postal delivery, common defense and general welfare.

Frank A. Seiberling is chairman of the Highways Committee, which has given this question extended study. Mr. Seiberling and Secretary Vorhis were delegated to represent the rubber industry.

NEW CLASSIFICATION OF RUBBER EXPORTS AND IMPORTS.

That the industry may be better informed concerning rubber exports and imports, the Bureau of Foreign and Domestic Commerce has adopted the following classification schedules for use in the monthly summaries published by the Department of Commerce:

EXPORT SCHEDULE.

40. RUBBER AND RELATED GUMS AND MANUFACTURES OF.

CLASS AND COMMODITY.

4011. Rubber, reclaimed, scrap and old, fit only for remanufacture.
4012. Scrap and old.
403. Boots and Shoes.
4031. Boots.
4032. Shoes and overshoes.
4039. Canvas shoes with rubber soles and all other rubber shoes, n.e.s.

44. Druggists' sundries and medical and surgical goods. (This will include: air goods, including bed pads, beds, cushions for invalids, operating cushions, life preservers and pillows, water bottles and bags, fountain and bulb syringes, sets and atomizers, bandages and sheeting, including hospital sheeting, blankets, pillow cases, bandages, aprons, basins, bath tubs; miscellaneous goods and catheters, finger-cots, surgeons' gloves, pouches, sponges, stoppers, tourniquets, tubes, tubing, urinals.)

405. Hard rubber goods, including electrical supplies, combs, etc. Electrical jars and other battery jars. Combs and other hair goods.

406. Tires and tire tubes. Pneumatic casings for automobiles. Pneumatic casings, all other (bicycle, motorcycle and aeroplane).

Pneumatic tubes for automobiles. Pneumatic tubes, all other (bicycle, motorcycle, airplane). Solid tires—automobile and motor truck tires. Solid tires—all other.

407. Waterproof cloth and clothing (rubberized). Waterproof cloth, including carriage cloth and auto topping (rubberized).

Waterproofed wearing apparel (rubberized). (For waterproof clothing not rubberized, see "Textiles.")

409. Other manufacturers of rubber. Belting, including transmission, conveyor and elevator belting of rubber or balata.

Hose, including braided, molded, cotton rubber-lined, wire wound, air-brake, fire, garden, submarine, vacuum, steam, suction, water, car-heating, and lining or cotton jacket for cotton rubber-lined hose.

Packing. Soles and heels. Rubber thread.

All other rubber goods (including brake linings, buffers, cord, friction tape, gaskets and washers, gasket tubing, splicing compound, mats, matting, mold work, roll covering, rubber springs, tubing, valves, cables, solvent, resistance compounds, etc.).

IMPORT SCHEDULE.

40. RUBBER AND RELATED GUMS AND MANUFACTURES OF.

CLASS AND COMMODITY.

401. Rubber, crude or unmanufactured. Rubber, crude, wild. Rubber, crude, plantation.

401. Rubber, reclaimed and scrap, fit only for remanufacture. Scrap and old.

402. Guttas and chicle—crude or unmanufactured. Balata. Chicle.

Crude. Refined. For chewing gum—see "Confectionery."

Gutta percha. Gutta serena. Other guttas.

Boots and shoes (includes boots, shoes and overshoes, and canvas shoes with rubber soles).

Druggists' sundries and medical and surgical goods. (This will include: air goods, including bed pads, beds, cushions for invalids, operating cushions, life preservers and pillows; water bottles and bags, fountain and bulb syringes, sets and atomizers; sheeting, including hospital sheeting, blankets, pillow cases, bandages, aprons, basins, bath tubs; miscellaneous goods and catheters, finger-cots, surgeons' gloves, pouches, sponges, stoppers, tourniquets, tubes, tubing and urinals.)

Hard rubber goods, including electrical supplies, combs and other hair goods, sheet moldings, pipe stems, rods and tubes.

Tires and tire tubes. Waterproof cloth and clothing (rubberized).

Waterproof cloth, including carriage cloth and auto topping (rubberized).

Composed of cotton or other vegetable fiber of which cotton is the material of chief value.

Composed of silk, etc. Composed of wool or mohair, etc.

Waterproof wearing apparel (rubberized). (For waterproof clothing not rubberized, see "Textiles.")

Composed of cotton or other vegetable fiber, or of which cotton is the material of chief value.

Composed of silk, etc. Composed of wool or mohair, etc.

Composed of linen, or ramie. Other manufacturers of rubber. Belting, including transmission, conveyor and elevator belting containing rubber or balata.

Hose, including braided, molded, cotton rubber-lined, wire-wound, air-brake, fire, garden, pneumatic, submarine, vacuum, steam, suction, water, and lining or cotton jacket for cotton rubber-lined hose.

Packing. Soles and heels. Rubber thread.

40990.

All other rubber goods (including brake linings, buffers, cord, friction tires, gaskets and washers, gasket tubing, splicing compound, mats, matting, mold work, roll covering, rubber springs, tubing, valves, cables, cement, insulating compounds, etc.).
(For insulated wire—see "Wire.")

OUTING DATE CHANGED.

The Outing Committee announces that in order to secure the desired accommodations the annual outing will be held on June 24, 1919, instead of June 17, as previously announced. The place will be the Seaview Golf Club, at Absecon, adjoining Atlantic City, New Jersey.

The Outing Committee is extremely fortunate in securing one of the finest and best equipped clubs in the country for the outing, and in a location that will be central for the entire membership.

OTHER MANUFACTURERS AGREE TO CRUDE RUBBER CHARGE.

The following manufacturers have signed the agreement to pay the Rubber Association 3 cents per 100 pounds on all crude rubber purchased by them:

Cortland Tire & Rubber Co.	Pioneer Rubber Mills.
Dreyfus Co., L. A.	Polson Rubber Co., The.
Eureka Co., The.	Schacht Rubber Manufacturing Co.
Eureka Rubber Manufacturing Co., Inc.	Zee-Zee Rubber Co.

OVERLAND FREIGHT RATES REDUCED.

George F. Hichborn, chairman of the Traffic Committee, announces that transcontinental rates from the Pacific coast on carloads of crude rubber have been reduced to \$1 per hundredweight and to \$2.25 per hundredweight in less than carloads, these rates effective May 29, 1919.

EXECUTIVE COMMITTEE OF TIRE DIVISIONS DISCUSS EXCISE TAXES.

A joint meeting of the Executive Committees of the Pneumatic and Solid Tire Manufacturers' Divisions was held May 14, 1919, at 52 Vanderbilt Avenue, New York City, A. G. Partridge presiding. The following were present:

George M. Stadelman, chairman, Pneumatic Tire Manufacturers' Division; A. G. Partridge, chairman Solid Tire Manufacturers' Division; H. C. Miller, Joseph C. Weston, W. W. Duncan, Maurice Switzer, T. S. Lindsey, A. H. Peterson, Horace De Lissier, R. T. Griffiths, Seneca G. Lewis, John A. Kearns, J. E. Baum, and H. S. Vorhis, secretary; by special invitation, M. L. Hemmingsway and W. C. Arthur.

The following members of the Special Committee on the Excise Tax on Tires and Tire Accessories were present: F. C. Van Cleef, Bernard M. Robinson, Kennedy M. Thompson, C. L. Landon, and J. C. Weston.

Important matters relating to the excise taxes on tires and accessories were discussed and definite action taken toward modifying certain features.

It was voted that the Excise Tax Committee be increased from seven to twelve members and that the following companies be invited to name representatives: Ajax Rubber Co., Inc., Hood Rubber Co., Lee Tire & Rubber Co., Empire Rubber & Tire Corp., General Tire & Rubber Co.

Horace DeLissier was appointed a member of the Executive Committee of the Pneumatic Tire Manufacturers' Division, succeeding H. L. McClaren, resigned.

The next meeting of the Pneumatic Tire Manufacturers' Division and the Solid Tire Manufacturers' Division will be held at the Hotel Chalfonte, Atlantic City, New Jersey, June 23, 1919, at 2.30 p. m.

COMMENT ON TREASURY REGULATIONS RELATING TO EXCISE TAXES ON TIRE AND TIRE ACCESSORIES.

May 14, 1919.

To the members of The Rubber Association of America:

The special committee appointed in the matter of the Federal excise tax on the sales of tires, inner tubes, parts and accessories, submits the following comment with reference to Regulations 47 approved under date of May 1, 1919, by the Treasury Department, a copy of which regulations

is sent you by this mail. Of these regulations the following articles affect particularly the manufacturer of automobile tires, inner tubes, parts and accessories, and should be carefully studied by every such manufacturer:

ARTICLES 1-16, INCLUSIVE. ARTICLES 34-50, INCLUSIVE.

Certain of these articles seem to require special comment or explanation, since they appear to be in either real or apparent conflict with a portion of the contents of the letter of March 11, 1919, issued by The Rubber Association. Treasury Department Regulations 47, taken in connection with the contents of this letter, should be considered as superseding and replacing the letter of March 11, 1919.

I. BASIS OF TAX.

ARTICLES 3, 4 AND 31 OF REGULATIONS 47.

It is recommended that the tax be billed as a separate item and not included in the price of the article. Articles 3 and 4 of Regulations 47 stipulate the method to be followed in determining the basis on which the tax is to be computed. As stated in article 34, the tax on sales at wholesale is based on the actual price for which the article is sold, and on sales at retail is based on the average price at which the manufacturer sold the same article at wholesale during the preceding month. No cash discounts can be deducted in computing the price on which the tax is payable.

The law requires that as to wholesale sales, taxes shall be collected on the actual amount of the sale price. Many manufacturers have two or more wholesale prices, as for instance manufacturers who sell at one price to jobbers and distributors, and at another price to retail dealers. Thus if a manufacturer sells a given tire for \$50 to a jobber, the tax would be \$2.50, but if the same tire were sold to a dealer for \$60, the tax would be \$3. Thus, this same tire from this same manufacturer would, if sold through the dealer at \$60, get to the consumer with \$3 tax, but if sold at \$50 through the jobber, it would get to the consumer with a \$2 tax. The many disadvantages to the manufacturer of such a course and the obvious unfairness to the dealer are quite apparent.

Therefore, in order that the tax paid by the consumer on products of rubber manufacturers may be uniform in each case, regardless of whether the goods are distributed by a manufacturer direct to a dealer or through the intermediate channel of a jobber or distributor, it is suggested that all products of rubber manufacturers sold to the wholesale trade be sold on the same price base and that in the case of jobbers or distributors to whom extra discounts are allowed in fact not as discounts on the sale price of the article, but as reimbursement for storage, delivery and other services rendered in behalf of the manufacturer, such extra discounts be regarded as a commission or service payment to the jobber, and that they be paid by the issuing of a credit memorandum to the jobber, or by other suitable method which will make the extra discount transaction with the jobber or distributor one separate from the sale of the article.

Commissions to agents and other expenses of sale are not deductible from the price. If articles are sold at the factory and the freight charges from the factory to the point of delivery are paid by the buyer as a specific item, or if they are sold delivered at a sum less freight charges to be paid by the purchaser, such charges need not be included as part of the price of the goods; but if the manufacturer sells goods at a delivered price and himself pays the freight, he is not entitled to make any deduction on account of the inclusion in the price of freight charges. If the price of an article is increased to cover the tax, the tax is on such increased price.

II. ADJUSTMENTS, REPLACEMENTS AND EXCHANGES.

ARTICLE 5 OF REGULATIONS 47.

Where adjustments, exchanges or replacements of tires and tubes are made by the manufacturer thereof with others than the manufacturers, producers or importers of the automotive vehicles enumerated in the Section 900, Subdivision 1 and 2 (except where the goods were not originally tax-paid—see second paragraph below), the tax charged the customer should be computed on the exact amount, if any, paid by the customer for the tires and tubes delivered by the manufacturer in making the adjustment, exchange or replacement. Thus, where a customer returns for adjustment a \$50 tire and the manufacturer gives the customer a \$50 tire, allowing \$25 for the old tire, and receives from the customer a differential of \$25 for the new tire given in adjustment, the tax charged to the customer should be \$1.25 or 5 per cent of the \$25 (the amount paid by the customer).

In opposition to the former verbal ruling of which you were advised on page 6 of the letter of March 11, 1919, the Treasury Department has now ruled that where tires and tubes, on which at the time of the original sale the tax was not paid, are adjusted, exchanged, or replaced, the tax to be then paid shall be based on the full price of the tire or tube delivered in the adjustment, replacement or exchange. Thus, if a \$50 tire sold prior to February 23, 1919, were presented for adjustment in March, 1919, and replaced by a \$50 tire for which the manufacturer received \$25, a tax of \$2.50 (i. e., 5 per cent of \$50 instead of 5 per cent of \$25, the price received) must be paid to the Government.

It appears to this committee quite impracticable and impossible for tire manufacturers to determine whether or not tires and tubes returned for adjustment were or were not tax-paid at the time of their original sale

by the manufacturer. Hence, this committee is taking immediate steps to effect if possible a return by the Treasury Department to its original ruling, under which the tax returnable on all adjustments, exchanges or replacements, regardless of whether the original sale was made before or after February 25, 1919, shall be based on the exact amount, if any, paid to the manufacturer by the customer for the article given in adjustment, replacement or exchange.

III. TAXABLE PURCHASES BY TIRE AND TUBE MANUFACTURERS.

ARTICLES 6 AND 7 OF REGULATIONS 47.

Although as pointed out in paragraph IV hereof, the sale of tires, tubes, and accessories to automotive vehicle manufacturers is tax-exempt, it is not true that this exemption applies to cases where taxable parts or accessories are sold by the manufacturer of such parts or accessories to the manufacturers of tires and tubes, or accessories.

Thus where the tire or tube manufacturer buys articles such as rims, tires, pumps, etc. (i. e., articles which are, at the time of purchase, in such condition as to be usable for the performance of their intended functions), a tax must be originally paid to the Government by the manufacturer of the part or accessory. If in such a case the tire or tube manufacturer both (a) reimburses the part or accessory manufacturer for this tax, and (b) resells the part or accessory as a component part of an article which he manufactures, the tire or tube manufacturer may claim credit from the Government for the amount of such tax so reimbursed. The tire or tube manufacturer must, however, return to the Government an amount of tax based on the price for which he subsequently sells the taxable article of his manufacture of which said part or accessory has become a component part.

The taking of credit by the tire or tube manufacturer for the tax for which he reimbursed the manufacturer of the part or accessory will be allowed only if the tire or tube manufacturer keeps such records and evidence as will clearly establish his right to this exemption.

SPECIAL NOTE: Since under Article 6 of the regulations 47, a purchaser of such parts or accessories cannot make claim to the Government for credit unless he knows the amount of such tax and unless he actually did pay as a tax the amount claimed, it will therefore be observed that the purchaser should request the manufacturers who furnish him with such parts or accessories to add to the tax as a separate item. Likewise billings covering the sale of cement, gum, etc., to accessory kit assemblers and other customers of like character should show the tax as a separate item.

ACCESSORY KIT ASSEMBLERS.

The principle laid down by the Treasury Department thus affecting tire and tube manufacturers likewise applies to those concerns which purchase their gums, cement and fabrics from rubber manufacturers and merely place an assortment of these materials in a kit for sale to the consumer. Thus, it appears that rubber manufacturers when selling cement, fabrics, gums, etc., to a customer who assembles these materials in a kit, should charge the customer a tax. This customer may, as above indicated, subsequently obtain from the Government a credit for the tax so paid to the rubber manufacturer.

IV. SALES TO THE GOVERNMENT, ETC.

ARTICLE 10 OF REGULATIONS 47.

Articles enumerated in Section 900, Sub-divisions 1, 2 and 3, when sold by the manufacturer thereof to state, city, county, or municipal governments, are exempted from tax. Where such articles are thus sold by any one other than the manufacturer thereof, the sale is taxable. The Treasury Department in Regulations 47 departs from the previous ruling given the committee and holds that sales to the United States Government are taxable.

V. ULTIMATE USE AS AFFECTING TAXABILITY.

ARTICLES 11, 12, AND 13 OF REGULATIONS 47.

The sale of an article by the manufacturer thereof may be taxable even though the article is not eventually used as a part or accessory for one of the articles enumerated in Section 900, sub-divisions 1 and 2. For instance the new regulations provide (see Article 16) that where tires are sold for use on trailers such tires are tax-exempt. This does not mean, however, where the tires reach the trailer owner through an intermediary, such as a dealer, that the original sale of such tires by the manufacturer is exempt.

Hence the present ruling is in direct contradiction to the principle recited in the latter part of page two and the first part of page three of the letter of March 11. Where tires are sold to a dealer and the dealer subsequently sells the tires to a trailer owner, the manufacturer cannot employ the new ruling and obtain credit for the tax on such tires should he refund it to the dealer.

VI. SALES TO MANUFACTURERS.

ARTICLE 14 OF REGULATIONS 47.

Article 14 makes it perfectly clear that all sales of tires, tubes, parts or accessories to manufacturers are not necessarily exempt from tax. The exemption applies only where the articles sold are for use, and are so used, by the manufacturer in the manufacture or production of new cars or for free replacement by him under contract of guaranty. Sales to the manufacturer for any other use are taxable. It is suggested that the certificate referred to in this article be worded as follows:

Referring to the Federal Excise Tax Law it is hereby certified that the articles covered by this order or contract of sale are to be used by the undersigned exclusively in the manufacture or production of new cars.

(Signature of Purchaser.)

SUPPLEMENTAL COMMENT ON EXCISE TAXES.

May 20, 1919.

To firm members of The Rubber Association of America:

In accordance with the intention expressed in our circular letter of May 14, the special committee appointed in the matter of the Federal excise tax secured a hearing before the Commissioner of Internal Revenue and other officials of the Department, on Thursday, May 15. Doubtful questions affecting the rubber industry were presented as formal inquiries to the Commissioner, and as a result of the conference the committee gathered some impressions relative to possible future changes in the regulations which it is deemed advisable to pass on to members of the Association with the full understanding, however, that there is no authoritative basis for procedure in respect to the tax other than the law itself or the rulings of the Department as set forth in Regulations 47.

The committee's interpretation of Regulations 47 as set forth in the letter of May 14 seems to be correct, and there is no reason to believe that these interpretations will be modified except as subsequent regulations or Treasury Decisions may furnish a basis for a modification. The committee believes that no further action should be taken by the Association. These possible modifications are given for the information of members of the Association, referring in each case to the title number under which the subject in question was treated in the letter of May 14.

I. BASIS OF TAX.

The committee presented to the Department the impracticability of basing retail sales upon the average wholesale price of the month immediately preceding. The Department has under consideration changing the regulations so as to make the basis of the tax in retail sales the average price at which the manufacturer sold the same article at wholesale during the second month preceding the month during which the retail sale was made. If this modification is made, retail sales in May, for instance, will be based upon the average wholesale price for March.

II. ADJUSTMENTS, REPLACEMENTS AND EXCHANGES.

The committee strongly pressed the justice and advisability of a return to the informal rulings on this subject given to the committee in March, 1919, and set forth in the letter of March 11, under which the tax in the case of adjustments, replacements and exchanges was to have been based upon the actual price, if any, paid to the manufacturer for the new tire or inner tube delivered in the transaction of adjustment, replacement or exchange. It will be noted that such a modification of Article 5 of Regulations 47 would be important as affecting adjustments, replacements, or exchanges of tires and tubes sold prior to February 25, and therefore, tax-free. The Department took the matter under advisement.

III. TAXABLE PURCHASES BY TIRE AND TUBE MANUFACTURERS.

The committee was given to understand that a supplemental regulation or Treasury Decision was in contemplation by the Department, modifying the provisions of Articles 6 and 7 of Regulations 47. It seems probable that a supplemental regulation will provide that manufacturers of tires, tubes and accessories may purchase tax free, for use in the manufacture of their products, articles otherwise taxable, and that such purchasers will be required at stated intervals to furnish a report as to the disposition of articles so purchased. On the basis of this report, the tax will be payable on articles so purchased and not used by the purchaser in the manufacture of his products. Such a ruling would probably place the manufacturer of tires, tubes and accessories in the same position as car manufacturers with reference to tax-exempt purchases and procedure to secure the tax exemption.

IV. SALES TO THE GOVERNMENT.

It was not indicated that any change would be made in the regulations with reference to sales to the Government.

V. ULTIMATE USE AS AFFECTING TAXABILITY.

There is no reason to believe that a modification will be made in the regulations affecting the interpretation under this title in the letter of May 14. The committee, however, pressed the point that where sales direct by a manufacturer were non-taxable, the same should be true of sales of the same articles through an intermediary, such as a dealer or jobber. The suggestion was taken under advisement but little hope was given for anticipating a change in the regulations.

VI. SALES TO MANUFACTURERS.

The certificate suggested under Title VI of the letter of May 14 was informally approved by the Department. As indicated under Title III above, a supplemental ruling is probable, providing that where an order or contract of sale is covered by this certificate, the sale shall be tax-free, and further providing for a report by the purchaser at stated intervals relative to his use of the articles purchased tax-free. A tax will be levied upon such articles as are shown by this report to have been used by the purchaser other than in the production of articles of his manufacture.

It appears that the Government will take the position that any sales taxable under the law, made from February 25 to May 1, the date of the

insurance of Regulations 47, will be taxable in accordance with the provisions of Regulations 47.

A form of "Proof of Exportation" to meet the provisions of Article 43 of Regulations 47 was submitted by the committee. This form will be compared by the Department with suggested forms submitted by Exporters' Associations and others and an approved form will be adopted and issued.

The committee cannot emphasize too strongly the fact that the Internal Revenue Department refuses to be committed by any informal opinions given in conference, and this special report of the committee is made only for the purpose of giving all members of the Association the benefit of information in the possession of the committee. While the report may serve to prepare the members of the Association for possible supplemental rulings, no member should, without fully realizing the risk, proceed in regard to the excise tax upon any other basis than is found in the law itself or in Regulations 47 as they now stand. Regulations 47 in their present form furnish the only authoritative interpretation of the law as far as the Treasury Department is concerned, and no alteration is authoritative unless made by a formal written Treasury Decision.

The committee will supplement its reports to the Association as the occasion may demand.

ASSOCIATION NOTES.

The Druggists' Sundries Division will meet on June 10 and 11 at the Yale Club, New York City.

W. J. Kelly, chairman of the Special Liberty Loan Committee, volunteered to solicit subscriptions from the rubber trade for the Salvation Army drive of last month. While no specific sum was allotted, the rubber industry responded generously.

A COURSE FOR RUBBER FACTORY FOREMEN.

The Mechanical Rubber Co., Chicago, Illinois, is conducting a three-month course in production methods, for the benefit of rubber factory foremen. This course is under the direction of the Business Training Corporation of New York, and is edited by John E. Calder, M. E. There are six text-books and a series of six lectures delivered at intervals. The course is intended to give each foreman new ideas and advanced instruction as to the best and most efficient manner of handling his daily production problems.

TESTING OF TEXTILE MATERIALS.

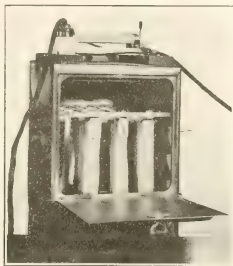
THE METHODS for examining and testing fibers and textile fabrics as conducted at the Bureau of Standards, are given under the above title in Circular of the Bureau of Standards No. 41 (third edition), from which the following abstracts are taken:

TENSILE STRENGTH AND LOAD-STRETCH RELATIONS.

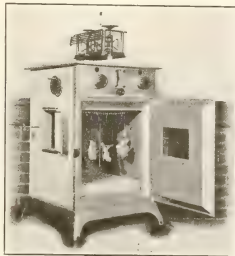
These determinations are made by tests upon single strands or upon skeins. The instruments employed in these tests are of the dead-weight type, and stress is uniformly applied by motor or by water pressure. All tests are performed under standard atmospheric conditions, the yarn or tissue being wound at least three times around a $\frac{3}{4}$ -inch drum securely held at each end. The testing length between center of drums is six inches and the pulling jaws travel at the rate of 12 inches per minute.

DRY WEIGHT.

Bone-dry weighings are made in the oven illus-



OVEN FOR DRYING TEST SPECIMENS.



OVEN FOR MAKING DRY WEIGHINGS

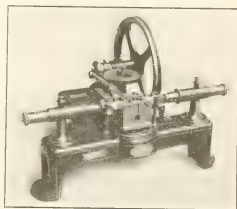
FABRICS.

Some of the determinations made upon fabrics are: weight, tensile strength and load-relations, percentage of fiber composition, thread count, yarn number or size, folding endurance, etc.

FOLDING ENDURANCE.

Some materials are subjected in actual use to considerable folding. In such cases, folding endurance tests will show to what extent they may be expected to resist deterioration from this cause.

The folding test is made upon a specially constructed machine which registers the number of alternate folds the specimen endures before breaking under a given constant tension. The determination is made in the standard atmosphere upon a test strip 15 mm. (19/32-inch) wide and 95 mm. (3 $\frac{3}{4}$ inches) long. The number of double folds made before rupture occurs is reported. By a double fold is meant that the sample is folded flat upon itself, then opened and folded at the same point upon itself in the reverse direction. A constant tension of 1,000 grams (35 ounces avoirdupois) is applied during the folding operation and the double folds are made at a rate of 200 per minute.



MACHINE FOR TESTING FOLDING ENDURANCE.

WASTE MATERIAL DEALERS MOVE TO NEW YORK.

About June 1, 1919, the headquarters of the National Association of Waste Material Dealers, formerly at 185 Summer street, Boston, Massachusetts, will be established in a suite of offices on the eleventh floor of the Times Building, Times Square, New York City. The formal opening, with a reception for members will take place on Monday, June 16, which is the day preceding the regular quarterly association meeting.

Charles M. Haskins, the secretary, has severed his connection with the "Commercial Bulletin," and will henceforth devote his entire time to the association. Plans are under way looking to the establishment of a mercantile credit service which will be of great service to members.

BUY WAR SAVINGS STAMPS—BUILD FOR AMERICAN PROSPERITY and your own success.

S. A. E. Adopts Standards Recommended by Tire and Rim Division.

At the annual meeting of the Society of Automobile Engineers, held February 5, 1919, recommendations of the Tire and Rim Division of the Standards Committee were approved for final presentation to the voting members of the society. The following S. A. E. Standards were adopted by the letter ballot which closed April 5.

SOLID TIRE SECTIONS.

Sectional Widths, Inches.	Minimum Total Sectional Width of Rubber, Square Inches.
7	16.75
8	19.75
10	23.75
12	31.75
14	37.75

The above table is in complete accord with the schedule worked out and adopted by the Solid Tire Division, War Service Committee of the Rubber Industry of the U. S. A. These areas include the hard and soft rubber used in solid tires.

INDUSTRIAL TRUCK TIRES.

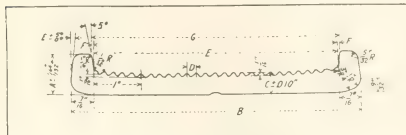
Tire Dimensions.		Wheel Dimensions.	
Nominal Diameter, Inches.	Sectional Widths, Inches.	Wheel Diameter, Inches.	Width of Felloes, Inches.
10	3 1/2	6	3 1/4
16	3 1/2	12	3 3/4
16	3 1/2	12	4 1/4
20	3 1/2	16	4 1/4
24	3 1/2	20	4 3/4
28	3 1/2	24	4 3/4

Wheel diameters shall be 4 inches less than the nominal tire diameters. The height of the finished tire is to be 2 inches for all sizes. The width of the wheel felloe is to be in accordance with the present S. A. E. standard truck tire practice and the rim diameter tolerances will be plus .0005, minus zero. This will make all the former or present S. A. E. standards for industrial truck tire sizes null and void.

BASE BANDS FOR SOLID TIRES.

Base Band Size.	Limits of B.		Circumferences.					
	A.	B.	C.	No.	D.	E.	G.	F.
3 1/2	4 1/4	4 1/4	11/32	18	0.191	3 7/16	3 9/16	1/16
4	5 1/4	4 13/16	1/32	20	0.196	3 59/64	4 1/16	9/128
5	6 1/4	5 7/8	1/32	26	0.189	4 59/64	5 1/16	9/128
6	7 1/4	6 7/8	1/32	32	0.185	5 59/64	6 1/16	9/128
7	8 1/4	7 7/8	1/32	38	0.182	6 59/64	7 1/16	9/128
8	9 1/4	8 7/8	3/64	40	0.196	7 27/32	8	5/64
10	11 1/4	10 7/8	3/64	50	0.196	9 27/32	10	5/64
12	13 1/4	12 7/8	3/64	60	0.197	11 27/32	12	5/64
14	15 1/4	14 7/8	3/64	70	0.197	13 27/32	14	5/64

The above dimensions conform to the recommended series of solid tire sizes and are in accordance with the base bands recommended and adopted by the War Service Committee of the Rubber Industry of the U. S. A. The recommended bands



BASE BANDS FOR SOLID TIRES.

relate to corrugated mill sections and it is optional with tire manufacturers to use either mill corrugated or dovetail facings,

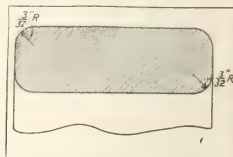
as the same general dimensions apply to bands with either facing.

BASE BANDS FOR INDUSTRIAL TRUCK WHEELS.

The sections of tires and base bands as recommended for solid tires for trucks will also apply to industrial truck wheels, and the recommended S. A. E. standard 3 1/2 and 5-inch pressed-on channel sections shown in the accompanying drawing is adopted for industrial truck wheels.

EDGES OF FELLOE BANDS.

The present specification as revised at the June meeting in Dayton to 3/16-inch radius on the inside edges and 1/16-inch radius on the outside edges of bands, is a specification to which it is practically impossible to get the mills to roll steel; therefore, the edges of felloe bands has been changed to 3/32-inch radius for all edges.



EDGES OF FELLOE BANDS.

ALLOWABLE TOLERANCES FOR FELLOE BANDS.

The tolerances given on page 8a, S. A. E. Handbook, Volume I, are used for the inspection of not only steel bands on wood wheels but also for steel wheels. The wording at the bottom of page 8a is changed to read, "Band circumference after application to wood wheels and circumferences of steel wheels."

On account of the difficulty of inspecting circumferences with a tape to the present close tolerances, "Band circumferences before application" is changed to prevailing commercial tolerances of plus 1/32 minus 1/16-inch.

WOOD FELLOE DIMENSIONS—PNEUMATIC TIRE RIMS.

At the June, 1918, meeting of the Society wood felloe dimensions were adopted for only the 6, 7 and 8-inch rims. To complete this specification for 3 1/2, 4 and 4 1/2-inch rims, the following dimensions are adopted:

Sectional Width, Inches.	Depth, Inches.
3 1/2	1 1/4
4	1 1/2
4 1/2	1 3/4
5	1 7/8
6	2 1/4
7	2 3/4
8	3 1/4

These felloe band dimensions conform with those adopted by the Automotive Wood Wheel Manufacturers' Association.

S. A. E. TIRE AND RIM DIVISION.

The Tire and Rim Division of the 1919 Standards Committee has been assigned the following subjects:

Airplane Landing Wheels, Carrying Capacity of Solid Tires, Pneumatic Tire Sections, Pneumatic Tires for Passenger Cars and Commercial Vehicles, Rim Dimensions—Cast Steel Wheels, Rubber Tires for Tractors, S. A. E. Deflection and Set Tests for Rims, Section Dimensions of Solid Tire Single and Dual Wheels with reference to thickness of permanent metal felloe band; Solid Tire and Wheel Diameters, Wheel Circumferences; Solid Tire Sizes and Wood Spokes, Passenger Cars.

—Width of felloes for rims with special sections.

—Width of felloes for demountable rims on cold-rolled bands.

The personnel of the Tire and Rim Division and the assignments to the different subdivisions are as follows:

CHAIRMAN.

Charles B. Whittlesey.

PNEUMATIC TIRES FOR PASSENGER CARS.

W. H. Allen, C. I. Bradley, Burgess Darrow, E. C. Hulse, William McMahon, J. C. Tuttle.

PNEUMATIC TIRES FOR COMMERCIAL VEHICLES.

W. H. Allen, C. I. Bradley, J. E. Hale, E. C. Hulse, William McMahon, J. C. Tuttle.

PNEUMATIC TIRES FOR AIRPLANES.

W. H. Allen, W. M. Britton, Burgess Darrow, C. I. Bradley, William McMahon, J. C. Tuttle.

SOLID TIRES.

W. H. Allen, C. I. Bradley, W. M. Britton, Lawrence R. Davis, Hugo Hoffstaeter, J. E. Hale, A. Hargraves.

PNEUMATIC TIRE RIMS.

W. H. Allen, W. N. Booth, C. C. Carlton, Burgess Darrow, Lewis Fine, C. N. McFarland, William McMahon, A. W. Richards, J. G. Swain, J. H. Wagenhorst.

SOLID TIRE BANDS AND RIMS.

W. H. Allen, W. N. Booth, C. C. Carlton, Lawrence R. Davis, Lewis Fine, J. E. Hale, A. Hargraves, C. N. McFarland, O. W. Mott, G. S. Porter, A. W. Richards.

S. A. E. SUMMER MEETING.

Plans are rapidly being completed for holding the summer meeting of the Society of Automotive Engineers at Ottawa Beach, Michigan, from June 23 to 27, inclusive. The place chosen affords ideal facilities for a meeting combining professional sessions with social features and recreation, and present indications forecast a well-attended and very interesting meeting. The papers and discussions will cover all important automotive subjects, particularly the passenger car of the future, farm tractors, and aeronautics. Representative exhibits of automotive apparatus may be arranged.

The recreation features include outdoor sports and athletic contests of varied character, many of the events being open to both men and women. There will be dancing every evening, a grand ball on the evening of June 26, and special entertainments for the ladies.

Reservations for the meeting may be made through the office of the society at 29 West 39th street, New York City.

KLUCINE.

The pseudo-scientific term "Klucine," based on the inventors' names, is the trade designation of a peculiar oil product. It is depolymerized China wood oil. In its commercial preparation it consists of a clear, dark amber-colored solution in gasoline. In this form it may be applied to fabrics and metallic surfaces, depositing a tough, elastic coating after 24 hours' drying. The Klucine solution may be used pure or in combination with pigments as a paint vehicle for the weather protection of any surface. Owing to its thinness, the film deposited by the solution has about double the covering capacity of ordinary painting materials.

Chemically, Klucine film is inert and when dry is insoluble in its original solvent. It is very flexible under all conditions of temperature, non-porous and tough. As applied to fabrics it penetrates the fibres and bridges the intervals of the woven structure, rendering the fabric both air and moisture proof. As a compounding ingredient it is said to add appreciably to the tensile strength of vulcanized rubber mixings. Pure rubber articles such as thread, elastic bands, and soft rubber goods generally, are preserved from deterioration by oxidation, it is said, by the application of a light coating of Klucine solution.

JUDICIAL DECISIONS.

FLIGEL, ET AL. vs. SEARS, ROEBUCK & CO.—Circuit Court of Appeals, Second Circuit, November 13, 1918.

Patent No. 1,099,031 for a waterproof garment including a cape and hood, the hood having a section capable of conversion either as a vizor or a military collar. This is known to the trade as the Billie Burke Brand.

Sears, Roebuck & Co. do not manufacture but sell the alleged infringing article. When the case came up in the District Court the court decided that there was no invention or infringement but the Court of Appeals held that there was invention but that the article sold did not infringe since the band on the article sold by Sears, Roebuck & Co. was simply a military collar and did not have any other function than decoration and was not capable of being used as a vizor as in the patented article. (Federal Reporter, Volume 254, page 698.)

DECISIONS OF COMMISSIONER OF PATENTS.

EX PARTE ROBERT E. MILLER, INC. Decided March 14, 1919.

The term "U-Put-On" as a trade-mark for rubber heels with an open casing attached, so that it may be applied by slipping the casing over the flared heel of a woman's shoe, held not registerable as a trade mark, since it is descriptive of the goods with which it is used. This decision was given by Assistant Commissioner Clay in affirming the ruling of the Examiner. (Official Gazette, March 15, 1919, page 733.)

CUSTOMS APPRAISER'S DECISIONS.

Protest 931,148, of George Borgfeldt & Co. (New York). RUBBER NIPPLES.—Rubber nipples classified as toys at 35 per cent ad valorem under paragraph 342, Tariff Act of 1913, are claimed to be rubber nipples dutiable as druggists' sundries at 15 per cent under paragraph 368. (Treasury Decisions, Volume 36, No. 18.)

Protests 930,720, etc., of Pitt & Scott (New York). INDIA RUBBER MANUFACTURES.—Merchandise classified as a manufacture of hard rubber at 25 per cent ad valorem under paragraph 369, Tariff Act of 1913, is claimed dutiable as a manufacture of india rubber or gutta percha at ten per cent under paragraph 368. (Treasury Decisions, Volume 36, No. 18.)

CONCERNING TRADE-MARKS.

A booklet of interest to every manufacturer and particularly to those in the rubber trade has been issued by William E. Richards, an attorney of New York, which contains a digest of the most useful information pertaining to trade-marks, handled in such a way as to be most readily comprehensible to all. The contents are in brief form and compiled so that all the facts necessary to the selection and registration of a trade-mark for a new line of goods can be obtained in a half-hour's time. Mr. Richards' booklet is divided into sections concerning "Digest of United States Law and Practice," "Digest of Practice in Foreign Countries," "Piracy of Trade-Marks Abroad," "Schedule of United States Charges," and "Schedule of Foreign Registration Charges." Mr. Richards states that the purpose of his book is to "present in concise form for ready reference the features most necessary to be available to lawyers and manufacturers to enable them to understand readily the leading points of law and practice on this important subject matter, and to take the necessary steps to secure protection for this class of property."

Nothing can be more important to the manufacturer of a new line of goods than the selection of a proper trade-mark and it may mean thousands of dollars to him eventually. In this regard Mr. Richards' brief advice on this subject cannot be improved upon.

First. It will be obvious that the most desirable and effective marks are those that are (a) simple in design; (b) easy to understand and remember; (c) attractive in appearance; and, (d) if the marks is an arbitrary word, easy to speak, spell, and attractive in sound.

The Honorable Augustus O. Bourn.

SCIENCE, politics, literature and rubber manufacture, while not closely correlated, are all more or less combined in the subject of this sketch, who is one of the oldest active members of the industry to-day. As a founder of two rubber manufacturing concerns and an investigator of rubber chemistry and vulcanization, he is prominent in the industry. As Governor of his state and as Consul-General at Rome, he was prominent in politics, while his literary work, mainly published for private distribution, serves to show another aspect of this versatile man.

Augustus Osborn Bourn was born October 1, 1834, at Providence, Rhode Island, and was educated at the public schools and Brown University in that city. After graduation he entered the employ of his father's firm, Bourn & Brown, later Bourn, Brown & Chaffee, manufacturers of rubber shoes, of which firm, after the death of his father, he became a member. In 1861 this firm was incorporated as the Providence Rubber Co. and seven years later was merged with the National Rubber Co. Mr. Bourn retained his connection with this company until 1887 or 1888, when he retired from business and joined his family in Europe.

Returning to this country in 1893, he established a rubber factory at Providence the next year, carrying on the business as the Bourn Rubber Co., and manufacturing footwear under the "Providence" and "Union" brands. When this business was incorporated in 1902, he continued to be president and manager. Meanwhile the plant has steadily grown till it now covers an entire city block in Providence.

About 15 years ago the Bourn Rubber Co. commenced the manufacture of insulated wire, and the business so increased in volume as to compel the erection, in 1918, of a separate factory for this branch of its business. No man in the rubber business has had a wider experience than ex-Governor Bourn. He is acquainted with every detail of the manufacture, as well as with the general management, of the business. He introduced many new styles and originated numerous innovations while with the National Rubber Co., among them being "snow excluders," fusion linings for boots and lumbermen's goods and button gaiters. He also manufactured the style now known as "Alaskas" several years before any other company produced this class of footwear.

As an investigator, his experiments in vulcanizing began in 1903, and were reported in an address at the Rubber Conference in New York in 1912, receiving the marked attention of all practical rubber men and chemists. He showed that the rate of vulcanization was doubled for every 11 degrees F. and that the same compound which vulcanized in 14 hours at a temperature of 194 degrees F. could be similarly vulcanized in 15 seconds in a heat of 327 degrees F.

He has written several treatises on astro-physical subjects, which, however, he declines to have published, having written them solely to occupy his spare moments. Some years ago he published, for private distribution, a small volume of memorial addresses of prominent public men delivered in Rhode Island

and elsewhere, and he is now preparing for publication a large number of speeches delivered between 1876 and 1888, which exemplify the political conditions and thoughts of that period.

In politics, Mr. Bourn has played a prominent part. He was a member of the Rhode Island Senate from 1876 to 1883 and from 1886 to 1888. For six years from 1877 he was chairman of the Finance Committee and member of the Judiciary Committee. He was the author of the "Bourn Amendment" to the Constitution of Rhode Island, extending to foreign-born citizens the same rights of franchise enjoyed by the native-born. In 1883 he was elected Governor by the Republicans, and re-elected in 1884, receiving all but 13 votes of the total of nearly 16,000 votes cast. During his term in this office, at the time of the settlement of the international differences growing out of the New Orleans riots, he was in 1889 appointed Consul-General

of the United States for Italy and was stationed at Rome. For a period he was both Consul-General and in charge of the Legation.

In his younger days he served with the Providence Horse Guards, rising from private to the rank of Lieutenant-Colonel of the First Battalion of Cavalry.

He moved from Providence to Bristol, Rhode Island, in 1873, and his residence, "Seven Oaks," is one of the most attractive in that city, the garden running down to the waters of Narragansett Bay. He is very fond of flowers and this garden is one of his hobbies; having been arranged by himself, it is now cultivated in accordance with his directions.

Ex-Governor Bourn is a busy, as well as a business, man, leaving Bristol at 10 a. m. and returning at 7:05 p. m. At noon it is his custom to lunch at the University Club, at Providence, with a number of congenial men, all graduates of Brown

University, including editors, educators, jurists and manufacturers prominent in the professions and leading industries.

Ex-Governor Bourn is an ex-officio member of the board of directors and Executive Committee of The Rubber Association of America, and was the second president of the New England Rubber Club, the predecessor of the above-named association.

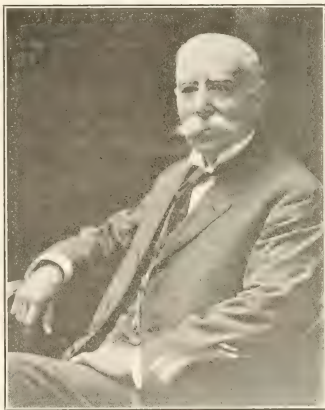
INTERESTING LETTERS FOR OUR READERS ARMENIAN BOLE.

TO THE EDITOR OF THE INDIA RUBBER WORLD:

DEAR SIR—Can you give me any information as to what bole Armenia may be? Furthermore, is it used in rubber compounding?

Bole Armenia, or more correctly Armenian bole, is a bright red, friable clayey earth found in Tuscany and in Armenia. Chemically it is clay or hydrous aluminum silicate, known in its purest forms as kaolin and fuller's earth. Its color is due to the presence of iron oxide.

Armenian bole is used to color or adulterate various substances, notably tooth powders, and was formerly used in certain horse medicines as an absorbent and astringent. Very little attention has been paid to it in rubber manufacture, although it is said that 10 per cent added to Pará rubber has been employed in making inner tube patches.—THE EDITOR.



News of the American Rubber Industry.

A RUBBER TECHNOLOGIST.

THERE are few men with scientific training who have had such a wide experience in rubber chemistry as Dr. Albert A. Somerville, who is now associated with the R. T. Vanderbilt Co., 50 East 42nd street, New York, dealer in rubber chemicals and ingredients.

Dr. Somerville studied and taught at DePauw and Cornell Universities, specializing in sciences and engineering. Summers he worked at Franklin Institute and at the Bureau of Standards in Washington. In 1912 he took charge of the physical testing laboratory of the India Rubber Co., New Brunswick, New Jersey, where guayule was one of the chief materials handled. The next year he was taken into the development department of the United States Rubber Co., and for five years supervised the experimental and development work at its laboratory in New York City, mainly on mechanical goods, but to some extent on tires and footwear. A year ago he was appointed technical assistant to the general manager of all the factories of the United States Rubber System.

During the war he represented the company on the War Service Committee, and he was the company's representative as a member of the American Society for Testing Materials, in the rubber section of which he has been especially active. He is also a member of the American Physical Society and of Masonic organizations.

Dr. Somerville therefore brings to his new position a wide, practical, and scientific knowledge of many lines of rubber manufacture, which will make him a valuable man, not only to the company, but also to its customers.



(C) Underwood & Underwood, N. Y.
DR. ALBERT A. SOMERVILLE.

DIVIDENDS.

The Ajax Rubber Co., Inc., New York City, manufacturer of tires and inner tubes, has declared its quarterly dividend of \$1.50 per share, payable June 15, on stock of record May 31, 1919.

The Converse Rubber Shoe Co., Malden, Massachusetts, manufacturer of rubber footwear, has declared its semi-annual dividend of three and one-half per cent on preferred stock, payable June 1 on stock of record May 24, 1919.

The B. F. Goodrich Co., Akron, Ohio, manufacturer of tires, balloon fabric, and other rubber goods, has declared its quarterly dividend of one and three-quarters per cent on preferred stock, payable July 1, 1919.

The India Tire & Rubber Co., Akron and Mogadore, Ohio, tire manufacturer, has declared a quarterly dividend of two per cent, payable July 1 on common stock; also one of one and three-quarters per cent on preferred stock, payable at the same time.

The Mason Tire & Rubber Co., Kent, Ohio, manufacturer of tires, declared a dividend of two per cent, payable May 20 on preferred stock of record January 31, 1919. A further dividend of ten per cent has been declared, payable July 15 on common stock of record June 10, 1919.

The New Jersey Zinc Co., New York City, manufacturer of zinc products, declared a quarterly dividend of four per cent, payable April 30 on stock of record May 10, 1919.

The Pennsylvania Rubber Co., Jeannette, Pennsylvania, manufacturer of tires and other rubber goods, has declared quarterly dividends of one and one-half per cent on common shares, and one and three-quarters per cent on preferred shares, payable June 30 on stock of record June 15, 1919.

The Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pennsylvania, manufacturer of automotive machinery, electric control devices, etc., has declared quarterly dividends of two per cent, payable July 15 and 31, respectively, on preferred and common stock of record June 30, 1919.

CHANGES IN PERSONNEL OF THE NEW JERSEY ZINC CO., INC.

The New Jersey Zinc Co., Inc., 160 Front street, New York City, and its branch, the Mineral Point Zinc Co., 1111 Marquette Building, Chicago, Illinois, announce the following recent changes in organization: E. V. Peters, general sales manager, succeeding H. G. Clopper, resigned, New York; Bushnell Bigelow, manager of Eastern sales, New York; R. M. Neumann, manager of Western sales, Chicago; W. P. Hardenbergh, Jr., manager of export sales, New York; J. Matthias, Jr., assistant sales manager, Chicago; Walter I. Hess, assistant sales manager, New York; F. C. Fuller, assistant sales manager, New York; and R. L. Cathcart, assistant sales manager, Pittsburgh, Pennsylvania.

THE UNITED STATES RUBBER PLANTATIONS, INC.

The organization meeting of the United States Rubber Plantations, Inc., was held Tuesday, May 20, 1919, and the following directors and officers were elected:

BOARD OF DIRECTORS.

H. Stuart Hotchkiss, Samuel P. Colt, Lester Leland, Charles B. Seger, Nicholas F. Brady, Edgar B. Davis, Ernest Hopkinson, W. J. Gallagher, Walter B. Mahony, Homer E. Sawyer, J. Newton Gunn, John W. Bicknell, L. D. Tompkins, W. H. Blackwell, and W. F. Bass.

EXECUTIVE COMMITTEE.

H. Stuart Hotchkiss, Samuel P. Colt, Lester Leland, Charles B. Seger, Walter B. Mahony, John W. Bicknell, and L. D. Tompkins.

OFFICERS.

Samuel P. Colt, chairman; Lester Leland, vice-chairman; H. Stuart Hotchkiss, president; W. J. Gallagher, vice-president; W. S. Gordon, vice-president; John W. Bicknell, vice-president, treasurer, and assistant secretary; L. D. Tompkins, vice-president and secretary; T. H. Lee, assistant treasurer; Walter B. Mahony, counsel for the company.

The United States Rubber Plantations, Inc., holds all the United States Rubber Co.'s plantations in Sumatra. The authorized capital is \$40,000,000 preferred and \$60,000,000 common, of which \$10,000,000 preferred and \$20,000,000 common has been issued. Extensions to the vast estates are contemplated in the near future.

PERFECTION MAKES KEYSTONE BRAND OF TIRES.

Since the publication of the many conflicting reports concerning the output of the Perfection Tire & Rubber Co., Fort Madison, Iowa, the following facts have been ascertained. The Perfection company makes under a cost-plus agreement with the Keystone Tire & Rubber Co., New York City, tires branded with the Keystone name and design. This does not affect the output of Perfection tires which are being marketed through the company's regular channels. In addition, the Nemours Trading Corp., New York City, has the exclusive export sales representation for the Perfection tire.

PRICE REDUCTION ON AUTOMOBILE TIRES AND TUBES.

The leading American automobile tire and tube manufacturers have announced reductions in their list prices for casings and tubes effective May 12. These reductions variously average from 10 to 15 per cent on the respective lists of tires and tubes. In explanation of these liberal reductions to the tire-using public one of the largest rubber goods manufacturers states that the lowering of the cost of rubber tires is not due to any apathy in tire buying, for the demand is well in advance of the supply. Three factors entered into the tire-price revision. First, the remarkable industrial efficiency in the rubber industry allowed a quick change from a war to a peace basis. Second, all war restrictions on the importation of crude rubber have been removed, enabling manufacturers to keep ample supplies on hand. Third, considerable progress was made in factory efficiency because of the strenuous pace required to meet Army and Navy demand for rubber goods of all descriptions.

NEW INCORPORATIONS.

Anthony Rubber Co., Inc., April 24 (New York), \$5,000. S. P. Anthony, 1951 Madison avenue, New York. To deal in automobile tires and tubes.
 C. E. Anthony, Hackensack, New Jersey. To manufacture tires and rubber goods.

Arrow Tire & Rubber Co., Inc., April 28 (New York), \$15,000. J. J. Jacobs, S. Bernheim, W. Loewenthal—all of 1877 Broadway, New York City. To manufacture tires.

Atlas Tire & Rubber Co., May 9 (New Jersey), \$500,000. H. A. Ludeke, J. E. Worthington, K. Keller—all of Trenton, New Jersey. Principal office, 26 West State street, Trenton, New Jersey. Agent in charge, M. G. Buchanan. To manufacture, purchase, and sell tires, tubes, and automobile accessories.

Bradstone Rubber Co., April 14 (New Jersey), \$125,000. W. P. Bradley, president and treasurer, 113 George street; L. E. Vance, vice-president and general manager, 117 Sumner street—both of Providence, Rhode Island; M. J. King, 172 Clinton Place, Hackensack, New Jersey. Principal office, de Hirsch avenue between Jefferson and Adams avenues, Woodbine, N. J. Agent in charge, L. J. Stone. To manufacture, buy and sell rubber goods.

Consumers Rubber Co., March 5 (Wisconsin), \$20,000. J. E. Bright, president and manager, 1402 South Main street; H. E. Johnson, vice-president, 1012 16th street; A. Huguenin, secretary and treasurer, 16th street and Junction avenue—all of Racine, Wisconsin. Principal office, Racine, Wisconsin. To manufacture, purchase, and deal in automobile tires, tubes, and accessories.

De Rosa Corp., May 13 (New York), \$250,000. A. De Rosa, 255 Fourth avenue; J. C. Danzilo, E. Goun, secretary—both of Brooklyn; M. J. Hertel, 1 West 104th street, New York City—both in New York. To manufacture auto tires.

Dunbar Tire & Rubber Co., March 15 (Delaware), \$500,000. P. L. Garrett, A. Jamison, F. E. Sterling—all of Wilmington, Delaware. Delaware agent, P. L. Garrett, Equitable Building, Wilmington, Delaware. To acquire property, land, and cultivation, and growing of rubber trees, said to produce and deal in rubber.

Ellison Tire & Rubber Co., Inc., May 19 (New York), \$10,000. J. Jacobs, S. Bernheim, W. Loewenthal—all of 1877 Broadway, New York City. To manufacture tires.

End Tire & Rubber Co., May 12 (Delaware), \$100,000. T. L. Croteau, P. J. Drew, M. W. Clancy—all of Wilmington, Delaware. Principal office with the Corporation Trust Co. of America, Du Pont Building, Wilmington, Delaware. To manufacture and deal in tires and inner tubes.

Ferguson Tire Corp., May 16 (New York), \$200,000. J. N. Mead, L. H. Ferguson—all of Ithaca, N. Y. To manufacture tires.

Five-Fourteen Tire Co., March 11 (Tennessee), \$50,000. A. F. Fulmer, W. E. Newman, W. W. Graham, H. Smith, F. Ford. Principal office, Memphis, Tennessee. To buy and sell automobile parts, supplies, accessories, etc.

Franklin Rubber Co., Inc., April 25 (New York), \$5,000. E. R. Dodge, D. Michelson, B. Greenwald—all of 61 Broadway, New York City. To manufacture tires.

G. & G. Tire & Rubber Co., Inc., May 2 (New York), \$20,000. M. J. Goldman, B. Gottlieb, A. J. Halprin—all of 41 Park road, New York City. To manufacture tires and rubber goods.

Holcomb Rubber Co., April 12 (Connecticut), \$25,000. A. Wurts, president and treasurer, J. F. Herbst, A. S. Campbell—all of Hartford, Conn. Principal office, 713-715 Albany avenue, Hartford, Connecticut. To deal in tires and rubber goods.

Home Vulcanizing Co., April 7 (Ohio), \$15,000. J. B. Frostick, president, 1217 Baird avenue; J. P. Grubb, vice-president and manager, 1804 Highland avenue; F. Martindale, 64 Laund street; F. A. Dunn, 666 E. D. Ryggles, director, 610 Gay street; G. E. Kricker, director, 812 Sixth street—all of Portsmouth, Ohio. Principal office, corner of Sixth and Gay streets, Portsmouth, Ohio. To vulcanize and sell tires, tubes, and automobile accessories.

Keyes & Stoner, Inc., May 15 (New York), \$5,000. J. F. Stoner, L. W. Keyes, E. V. M. Clements—all of New York. Principal office, Albany, New York. To deal in auto tires.

Lafayette Tire Corp., April 25 (New York), \$4,000. E. W. Smith, 159 Goulding street; J. Slattery, 64 Laund street; F. A. Dunn, 666 E. D. Ryggles—all of Buffalo, New York. Principal office, Buffalo, New York. To manufacture tires.

Leonard Tire Co., Inc., May 5 (New York), \$10,000. L. Fridiger and C. Buchner, 11 Chambers street; N. Danziger, 1435 Ogden avenue—all of New York City. To deal in tires.

Longwood Tire Co., May 1 (New York), \$500. M. H. Weiss, P. E. Barden, K. A. Woods—all of 165 Broadway, New York City. To manufacture tires.

McCoy Tire & Rubber Co., Inc., April 17 (Delaware), \$1,000,000. T. L. Croteau, P. J. Drew, M. W. Clancy—all of Wilmington, Delaware. Principal office with the Corporation Trust Co. of America, Du Pont Building,

Wilmington, Delaware. To deal in and manufacture rubber tires, tubes and accessories.

Monette Tire Co., Inc., May 7 (New York), \$10,000. M. Levin, N. Weinberg, 11 N. Second street—all of New York. New York City. To manufacture tires.

March Tire & Rubber Co., April 25 (New York), \$20,000. P. S. Malickson, Bala, H. J. Saizow, 3837 Poplar street, Philadelphia—both in Pennsylvania; S. B. Howard, 63 Cedar street, New York City. To manufacture tires.

Mechanical Tire Co., Inc., May 19 (New York), \$10,000. A. Bers, 10 Decker street; W. C. Horst, 1000 Park street, New York City. Principal office, 18 Wilson Place—both of Mt. Vernon—both in New York. Principal office, Mt. Vernon, New York. To manufacture tires, etc.

Mileage Tire Co., Inc., March 15 (Illinois), \$15,000. H. E. Olson, H. P. Hays, E. L. Martin, J. R. Wielgert. Principal office, 2118 Michigan avenue, Chicago, Illinois. To manufacture and sell tires and tubes.

Montana Tire & Rubber Co., March 24 (Montana), \$10,000. C. E. and L. W. Montgomery, 415 S. Main street, Great Falls, Montana. Principal office, Butte, Montana. To sell automobiles and accessories.

Nallo Rubber Co., Inc., April 25 (New York), \$10,000. L. Rose, 403 Lexington avenue; New York. Principal office, 383 Edgeview avenue, New York. To manufacture tires.

Nassau Tire Co., Inc., May 19 (New York), \$50,000. C. S. Baldwin, L. A. Abrams, G. L. Grover—all of Rockville Centre, New York. Principal office, Rockville Centre, New York. To manufacture tires.

National Rubber & Vulcanizing Co., February 18 (Illinois), \$10,000. A. G. and R. W. Bergstrom, A. Johnson. Principal office, 505 East State street, Rockford, Illinois. To repair and sell tires, etc.

Nemours Trading Corp., March 31 (Delaware), \$6,000,000. A. I. Du Pont, president; J. J. Lawrence, vice-president; J. H. Schuchman, vice-president; H. H. Noyes, vice-president and general manager, New York City; G. W. Fay, secretary and treasurer, C. B. Bishop, Wilmington, Delaware; A. M. Fox, Wilmington, Delaware. Principal office, 151 1st avenue, New York City. To manufacture and deal in automobile tires.

New England Savold Tire Co., May 14 (Delaware), \$3,000,000. T. L. Croteau, M. W. Clancy, P. J. Drew—all of Wilmington, Delaware. Delaware agent, Corporation Trust Co. of America, Du Pont Building, Wilmington, Delaware. To remanufacture salvaged tires.

New York Savold Tire Co., Inc., April 30 (New York), \$250,000. A. E. H. Moore, 210 E. 10th street; J. H. Clancy, 764 St. Johns Place; J. A. MacLean, 318 74th street—both of Brooklyn—both in New York. To manufacture tires.

Ohio Savold Tire Co., May 7 (Delaware), \$2,000,000. T. L. Croteau, P. J. Drew, M. W. Clancy—all of Wilmington, Delaware. Delaware agent, Corporation Trust Co. of America, Du Pont Building, Wilmington, Delaware. To manufacture and deal in tires.

Page-Edwards Tire Corp., April 23 (New Jersey), \$50,000. R. W. Page, president; D. L. Page, vice-president, both of Maplewood; T. P. Edwards, secretary and treasurer, 830 Broad street, Newark, New Jersey. Agent in charge, D. L. Page. To manufacture, sell, import, and export automobile tires, tubes, and accessories. This company will handle the Oldfield, Federal, Hewitt and Perfection tires in its territory.

Para Manufacturing Co., April 25 (New Jersey), \$50,000. H. E. Lawrence, president; Wilson, N. J., secretary—all of 533 Van Vorst place, Union Hill, New Jersey. Principal office, 533 Van Vorst place, Union Hill, New Jersey. Agent in charge, T. J. Wilson. To manufacture, repair, and retread automobile tires, stencils, typographic pens, etc. and articles made of rubber and other materials.

Perfection Tire & Rubber Co., Inc., May 13 (New York), \$100,000. E. W. McCarthy, 250 West 54th street; A. L. Farb, J. J. Jordan, both of New York City. To manufacture and deal in automobile tires.

Risse Tire Sales Corp., April 25 (New Jersey), \$25,000. W. S. Kidder, 23 Cedar street; E. A. Noonan, 4 Earl street; W. J. McFadden, 776 Broad street—all of Newark, New Jersey. Principal office, 23 Cedar street, Newark, New Jersey. Agent in charge, W. S. Kidder. To buy, manufacture, sell, export, import, and generally deal in automobiles, automobile accessories, etc.

Syracuse Rubber Co., Inc., May 9 (New York), \$3,000,000. E. R. Caldwell, 201 Onondaga avenue; F. Shane, 2019 Midland avenue; R. L. Caldwell, secretary, 2019 Midland avenue; Syracuse, New York. Principal office, 2019 Midland avenue. To manufacture, sell, import, and export automobile tires, tubes, and accessories. This company has purchased 38 acres for a factory site and intends to build plant thereon in which operation will be conducted in November.

Tennessee Rubber Co., March 24 (Tennessee), \$10,000. S. B. and G. N. Newman, M. Petway, J. A. Ayres, L. G. Broughton, Jr. Principal office, Nashville, Tennessee. To buy, sell, and deal in automobile tires.

Thermosuit Tire, Inc., April 22 (New York), \$500,000. M. H. Nason, 111 Broadway; E. E. Gallun, 108 West 43d street; S. R. Driffield, 310 Avenue avenue—all of New York City. To manufacture and sell saving apparel.

Tire Service Co. of Brooklyn, May 5 (Delaware), \$25,000. W. Mackay, J. E. G. G. Tire Co., 1010 Avenue A, East 40th street, Brooklyn, N. Y. Delaware agent, H. F. Gilg, 206 West 11th street, Wilmington, Delaware. To manufacture and deal in tires.

Union Tire & Rubber Station, Inc., March 19 (New Jersey), \$4,000. C. Weldon, B. Alper, G. A. Dorfman—all of 1877 Broadway, New York City. Principal office, 360 Broadway, Union Hill, New Jersey. Agent in charge, E. H. Homsey, 200 Broadway, New York City.

Universal Tire Sales Co., Inc., May 8 (New York), \$50,000. M. A. Turski, 789 Fillmore avenue; J. K. Turski, 103 East Parade avenue; F. X. Turski, 151 Houghton street—all of Buffalo, New York. Principal office, Buffalo, New York. To manufacture tires.

Wright-Jefferies Tire & Battery Co., March 19 (New Jersey), \$10,000. T. Wright, 1610 North 15th street; J. H. Jeffries, 1610 North 15th street; Philadelphia, Pa. Principal office, 183 East Main street, New Brunswick, New Jersey. Principal office, 60 Albany street—both of New Brunswick, New Jersey. Agent in charge, W. M. Bloebaum. To buy, sell, and repair tires.

Wright Standard Tire & Rubber Co., April 30 (Delaware), \$1,000,000. T. L. Croteau, P. J. Drew, M. W. Clancy—all of Wilmington, Delaware. Delaware agent, Corporation Trust Co. of America, Du Pont Building, Wilmington, Delaware. To manufacture automobile tires and rubber goods.

EDWARD V. PETERS, GENERAL SALES MANAGER.

EDWARD V. PETERS, the newly appointed general sales manager of the New Jersey Zinc Co., New York City, though born in St. Louis, Missouri, in 1881, is virtually a New Yorker, having moved East with his family and finished his education at Greenville Academy, Greenville, New York. His first business experience was in the electrical department of the Manhattan railway system, and within a year he was placed in charge of electrical purchases. In 1903 he organized a purchasing department for J. G. White & Co., engineers and contractors, New York City, where he remained in charge until August, 1906, when he accepted a position in the purchasing department of the New Jersey Zinc Co., soon rising to assistant purchasing agent. In 1913 he was made purchasing agent, thereafter becoming assistant sales manager, and, a few weeks ago, succeeded H. G. Clopper, resigned, as general sales manager.

During the war the New Jersey Zinc Co. was active in serving the Government and also the allied nations, and much of Mr. Peters' time was spent in connection with this work.

Mr. Peters is a man of excellent business judgment, a great believer in cooperation and organization, and has been a potent force in upbuilding the units of the sales staff of the company into an energetic selling organization. He is fond of sports, and in his younger days played baseball and tennis. In the last few years he has confined his recreation mainly to golf and motoring. He is president of the Flushing Country Club, Flushing, Long Island, New York.



EDWARD V. PETERS.

CLOPPER GOES TO EAGLE-PICHER CO.

HERBERT G. CLOPPER, for thirty years connected with the zinc industry, and identified with the New Jersey Zinc Co. since its formation in 1897, has resigned as general sales manager of that company to accept the position of vice-president of the Eagle-Picher Lead Co., Chicago, Illinois, corrodors and manufacturers of lead products.



HERBERT G. CLOPPER.

Mr. Clopper was born in Camden, New Jersey, August 12, 1873, and was educated in the public schools of that city. In his sixteenth year he entered the employ of the Lehigh Zinc & Iron Co., Philadelphia, Pennsylvania, as office boy. Eight years later, when the New Jersey Zinc Co. was formed he was made assistant bookkeeper. In May, 1899, he became a clerk in the purchasing department, and steadily advancing, he was appointed purchasing agent five years later. He made a thorough study of purchasing systems of industrial corporations, and in 1912, when a general purchasing department was established, with branches in different sections of the country, he was selected as head, with the title of general purchasing agent, in which position

he was enabled to create one of the largest and most efficient purchasing organizations in the country. In June, 1913, on the retirement of W. W. Melvin, who for nearly half a century had been with the company, and for much of this time its sales manager. Mr. Clopper was appointed to this important position, and although this change from purchasing to selling required a complete reversal of point of view, his success in the new position is a matter of record, and the Eagle-Picher Lead Co. is to be congratulated upon securing his services.

PERSONAL MENTION.

G. H. Hamilton, formerly special representative of The Federal Rubber Co. of Illinois, Cudahy, Wisconsin, has been appointed export manager, with offices at 38-40 West 62d street, New York City.

G. R. Lundane has been placed in charge of the newly established New York City office of The Black & Decker Manufacturing Co., Baltimore, Maryland, manufacturer of portable electric tools, compressors, and special machinery, with headquarters at Room 2920, Equitable building. Mr. Lundane will include the State of Connecticut in his territory as well as New York City and the surrounding territory. The Black & Decker company have branches in Philadelphia, Atlanta, San Francisco, Chicago, Detroit, Columbus (Ohio), Buffalo and Boston, as well as foreign connections in England, France, Norway, Sweden and Japan.



G. R. LUNDANE.

Arthur J. Peebles has been appointed general sales manager of The Armstrong Rubber Co., Inc., 2 West 61st street, New York City.

J. S. McClurg has been elected to the board of directors of The Carlisle Cord Tire Co., Inc., New York City and Andover, Massachusetts.

Martin K. Whalen, formerly special representative of the Century-Plainfield Tire Co., Plainfield, New Jersey, has been appointed manager of the southern district of the International India Rubber Corp., South Bend, Indiana.

C. G. Hill, who for two years was assistant manager of the record department of The Rubber Association of America, and later in charge of the Association's Pacific Coast office, is now with Charles T. Wilson Co., Inc., New York City, crude rubber importers.

Frank Waldo, of the firm of E. M. & F. Waldo, New York City, dealers in colors and compounding ingredients for the rubber trade, recently returned from Europe where he has been military attaché at The Hague.

W. J. Cromie, formerly with the Belmont Packing & Rubber Co., 139 North 2d street, Philadelphia, Pennsylvania, has become associated with the Gustin-Bacon Manufacturing Co., 1021 Filbert street, in the same city. This concern manufactures mechanical rubber goods, belting, packing, hose, etc.

F. K. Starbird has been appointed northwestern district manager for the Firestone Tire & Rubber Co., Akron, Ohio, and will cover Minneapolis, Great Falls, Minot, Fargo and Des Moines branches.

THE GILLETTE RUBBER CO., EAU CLAIRE, WISCONSIN, HAS TAKEN over the plant and business of the Eau Claire Manufacturing Co. for manufacturing machinery and equipment for the tire trade. A new machine shop has been built and the company is producing a bead-making machine of its own design, as well as tire-building and portable tire stands, tire cores and molds, and other specialties.

TRADE NOTES.

The Pennsylvania Rubber Co., Jeannette, Pennsylvania, has established a branch office at Jacksonville, Florida, on the corner of Forsythe and Clay streets, in the heart of the automobile district. Captain J. L. Branan, recently returned from service in France, is in charge.

The Newman Tire & Rubber Co., Inc., 244 West 54th street, New York, has increased its capital from \$5,000 to \$200,000. It has added three additional stores to its chain and greatly increased its jobbing business.

The Pearson Products Co., New York City, has recently been incorporated for the purpose of selling certain patented articles and products. Herbert P. Pearson, the incorporator, was formerly with the Cravenette Co.

The Black Hawk Tire & Rubber Co., Hippee Building, Des Moines, Iowa, is building the first unit of its new factory on East 20th street, between Capitol avenue and Walnut street, along the right of way of the Chicago-Great Western, Chicago-Rock Island, and Interurban railway tracks. This unit will be two and one-half stories high, with basement, 216 by 73 feet. The officers of the company are: William Moran, president; John F. Griffin, vice-president; E. A. Lewis, secretary; and J. J. O'Malley.

The Mason Tire & Rubber Co., Kent, Ohio, has bought the three-story building at 233 West 58th street, New York City, where it will make extensive alterations. A large stock of solid and pneumatic tires will be carried in the new quarters, which will be in charge of W. M. Doucette, eastern district manager of the company.

The Miller Rubber Co., Akron, Ohio, has established branches at Charlotte, North Carolina; Memphis, Tennessee; and Cedar Rapids, Iowa, each fully equipped with a complete stock of tires, tubes, accessories, and repair materials.

The Harmon Rubber & Manufacturing Co., Inc., 1211 Harmon place, Minneapolis, Minnesota, has prepared plans for a two-story plant, 40 by 160 feet, to be located in the Midway District, between Minneapolis and St. Paul, for the purpose of manufacturing inner tubes. This company is a reorganization of the Harmon Tire & Repair Co. of Minneapolis, and it manufactures high-grade inner tubes and rubber goods. It will sell to jobbers in the Northwest. The officers are: J. F. Brown, president; W. F. Rickley, vice-president and general manager; and J. E. Johnson, secretary and treasurer.

The Century Rubber Works, Chicago, Illinois, on April 26, suffered by a fire on its premises on Rawson street at Elston avenue. The loss was covered by insurance and the company is again operating at full capacity. Plans are also being drawn for a new plant to be erected at an early date. E. B. Tozier is general manager.

The Carlisle Cord Tire Co., Inc., New York City and Andover, Massachusetts, at its special meeting of stockholders held May 3, 1919, voted to increase its authorized capital stock from \$500,000 par value preferred and 10,000 shares of common stock, with no par value, to \$1,000,000 par value preferred stock and 25,000 shares of common stock with no par value.

The Archer Tire & Rubber Co., Inc., Minneapolis, Minnesota, has elected the following officers: W. F. Bigelow, president; William A. Beiter, vice-president; and M. A. Hessian, secretary and treasurer.

The Carlisle Tire & Rubber Co., Carlisle, Pennsylvania, has completed a new factory addition, doubling its facilities. It also expects to build another addition of reinforced concrete, steel and glass, three stories high, 300 feet by 190. It intends to begin manufacturing automobile tire casings before the spring.

The C. A. Shaler Co., Waupun, Wisconsin, manufacturer of vulcanizing apparatus and tools, is building a three-story warehouse, 42 by 90 feet, and when that is completed will build an additional factory building of twice that size.

The Hodgman Rubber Co., Tuckahoe, New York, is building a one-story, reinforced concrete structure, 70 by 134 feet, so constructed that four additional stories can be added later. This building is to be used as an additional calendar room.

The American Rubber Co. of Chicago, Chicago, Illinois, has increased its authorized capital stock from \$95,000 to \$1,000,000.

The Johnstone Tire & Rubber Co., People's Gas Building, Chicago, Illinois, has elected the following officers: E. C. Walton, president; B. R. Blackwelder, vice-president; C. W. Mussey, secretary and treasurer; A. P. Eves, consulting rubber chemist and engineer. Mr. Eves was four years with the Kelly-Springfield Tire Co., four with the Firestone Tire & Rubber Co., and eight with The Goodyear Tire & Rubber Co.

The Rubber Trade Association of New York has removed its offices to 44 Broad street, Room 824, New York City.

The General Asbestos & Rubber Co. has removed from 106 West Lake street to 14 North Franklin street, Chicago, Illinois.

The American Eagle Rubber Cement Co. has removed its general offices and factory from 59 East 43d street to 3026-3030 South La Salle street, Chicago, Illinois.

The American Zinc, Lead & Smelting Co., St. Louis, Missouri, has appointed the American Zinc Sales Co., its representative, at 1415 Conway Building, Chicago, Illinois. A. C. Eide is in charge as manager.

The Hill Pump Valve Co., Archer avenue, Canal and 23d streets, Chicago, Illinois, is building a modern plant to be equipped with electric furnaces and the latest automatic machinery. The building will be one story high and contain about 50,000 square feet of floor space. It is located on the company's recently acquired property at the southeast corner of Belmont and Knox avenues, which fronts 213 feet on the former and 964 on the latter.

A. Daigler & Co., 54 West Kinzie street, Chicago, Illinois, dealers and importers in chemicals, oils, and fillers for the rubber trade, whose factory was damaged by fire a short time ago, report that their building has been remodeled and that they are in position to handle all orders.

Nulsen, Klein & Krause Manufacturing Co., Levee and Sidney streets, St. Louis, Missouri, dealers in barytes, whiting, and other ingredients used in rubber compounding, has changed its firm name to Nulsen Corporation.

The Stanley Insulating Co., Inc., 43 Exchange place, New York City, and Great Barrington, Massachusetts, manufacturer of the "Ferrosol" rubber-finished vacuum bottle, is a Maine corporation and has been authorized to do business in the State of New York. W. S. Hood is the New York representative and the officers of the concern are: Otis A. Glazebrook, Jr., president; Horace W. Davis, vice-president; William S. Hood, assistant secretary and treasurer; and R. G. Williams, assistant treasurer.

The Parker Pen Co., Janesville, Wisconsin, manufacturer of the "Lucky Curve" fountain pen, will erect a four-story office and factory building, with basement and sub-basement, of reinforced cement and brick veneer, at the corner of Court and South Division streets, to cost \$125,000.

The Essenkay Products Co., Chicago, Illinois, manufacturer of the "Essenkay" tire filler, has elected the following officers: F. D. Mayer, president and treasurer; R. Peiser, G. Weir and J. E. Duffield, vice-presidents; and W. B. Russell, secretary.

The W. A. Sheaffer Pen Co., Fort Madison, Iowa, manufacturer of the "Sheaffer" fountain pen, has been authorized to do business in New York State, and A. L. Kugel has been designated representative and manager of its New York City office, at 440 Canal street. The company also has offices in Chicago and San Francisco. The officers are: W. A. Sheaffer, president; B. T. Coulson, vice-president; J. C. Brewster, treasurer; and W. A. Scherfe, secretary.

Foreign Trade

Our Foreign Department, through our Buenos Aires Branch and extensive banking connections throughout the World, has unexcelled facilities for the intelligent and efficient handling of your foreign banking business. Consult us regarding any foreign financial or trade transactions in which you are interested.

The First National Bank of Boston

Capital, Surplus, and Profits, \$27,865,000
Resources . . . Over \$220,000,000

Branch at Buenos Aires, Argentina

CANADIAN CONSOLIDATED RUBBER CO. REPORT
AND ELECTION.

At an adjourned meeting of the shareholders of the Canadian Consolidated Rubber Co., held at Montreal, Canada, April 22, President Rieder read the report of the directors, which was, in part, as follows:

"Sales for 1918 were the largest in the history of your company, \$18,785,640.28, being an increase of 15.08 per cent. over 1917. Of this, \$793,403.28 was made for war purposes. Export trade suffered slight reduction due to shipping embargoes. During the year the selling prices on most lines moved upwards, resulting in an average increase of only 9 per cent. over last year. Sales in all departments as well as in all territories in Canada show increases over 1917."

Mr. Rieder announced his withdrawal from the presidency and the board of the company, and a resolution expressing appreciation of the services which he had rendered to the company was passed unanimously.

The following directors were elected for the ensuing year: Charles B. Seger, president, United States Rubber Co.; Sir Mortimer B. Davis, president, Imperial Tobacco Co. of Canada; Colonel Samuel P. Colt, chairman United States Rubber Co.; V. E. Mitchell, K. C.; E. W. Nesbitt, M. P.; W. A. Eden; R. E. Jamieson; J. B. Waddell; R. C. Colt; A. D. Thornton; H. Wellein; and Messrs. H. E. Sawyer, J. N. Gunn, E. S. Williams and Ernest Hopkinson, vice-presidents of the United States Rubber Co.

At a meeting of the board of directors, held immediately after the annual meeting, Charles B. Seger was elected president and W. A. Eden and Victor E. Mitchell, K. C., vice-presidents. Walter Binmore was appointed secretary, H. P. Nellis, assistant secretary, Hugo Wellein, treasurer, and J. P. B. Daigneau, assistant treasurer.

The statement of the company, and its constituent companies, excluding all offsetting accounts between the companies, as of December 31, 1918, is here given.

ASSETS.	
Cash	\$234,485.67
Accounts receivable	1,834,282.14
Manufactured goods and materials	9,228,695.98
Total current assets	\$11,297,463.79
Investments, including good will	\$163,255.50
Property and plants	8,336,832.06
Prepaid and deferred assets	\$12,781.46
Total assets	\$20,436,332.79
LIABILITIES, RESERVES AND CAPITAL.	
Accounts payable	\$2,160,338.45
Acceptances payable	145,385.62
Accrued liabilities	438,997.02
Total current liabilities	2,744,721.07
First and refunding 5 per cent gold bonds, due January 1, 1947	6,600,000.00
Bonds 6 per cent due October 1, 1946	2,600,000.00
Total liabilities	\$9,944,721.07

General reserves	99,745.05	
Reserve for depreciation of property and plant	1,454,620.84	
Total reserves		1,554,325.89
Capital stock—preferred	3,000,000.00	
Capital stock—common	2,805,500.00	
Total capital stock	5,805,500.00	
Surplus	3,700,795.89	
Total capital stock and surplus		11,506,295.80
Total liabilities, reserves and capital		\$25,305,342.76
INCOME.		
Net sales (in Canada and export). Footwear, tires, clothing, general rubber goods, reclaimed rubber and miscellaneous	\$18,785,640.28	
Cost of goods sold, selling and general expenses, taxes, interest on borrowed money, repairs, depreciations, provisions for bad debts and business profits tax	17,180,789.17	
Net profit for period	1,604,851.11	
Dividends paid on preferred stock	209,989.50	
Net addition to surplus	1,394,861.61	
Surplus January 1, 1918	4,305,934.19	
Surplus December 31, 1918	\$5,700,795.80	



CHARLES B. SEGER,
President Canadian Consolidated Rubber Co.
Limited.

FREDERICK W. DUNBAR, CRUDE RUBBER
IMPORTER.

EARLY this year, when it was announced that Frederick W. Dunbar had resigned his position as manager of the New York office of Alden's Successors, Limited, of London, England, there was some curiosity in the trade as to his future plans, for it was scarcely conceivable that a man so thoroughly versed in the crude rubber trade could contemplate abandoning it for any other line of business. The question is now settled by the announcement of the new crude rubber importing house of F. W. Dunbar & Co., 280 Broadway, New York City.

Mr. Dunbar's experience dates back to the middle 'nineties, when he was manager at Pará for Adolbert H. Alden, which house was the branch in that city of the New York Commercial Co., at that time the heaviest rubber importing concern in the United States. Later he was made vice-president of the last-named company, with offices in New York City. In 1914, when the concern was reorganized as Alden's Successors, Limited, of London, England, Mr. Dunbar was appointed American agent, attorney-in-fact, and manager of the New York City office of the company, which position, as stated above, he resigned at the close of the year 1918. His many friends in the trade wish him the highest success in his new business.



FREDERICK W. DUNBAR.

CANADIAN BANK BRANCHING OUT ABROAD.

The Royal Bank of Canada, New York City, which already has direct representation in Cuba, is planning to open branches at Rio de Janeiro, Brazil; Buenos Aires, Argentina; and Montevideo, Uruguay. A Canadian branch is also contemplated, and a new branch has just been established at Fort de France, Martinique.

THE PREMIER RUBBER CO., GUELPH, ONTARIO, HAS CHANGED ITS name to The Northern Rubber Co., Limited. Plans have been practically completed for building a four-story factory, 200 by 80 feet, for the manufacture of rubber footwear exclusively. This is the factory which it was recently announced would be built by The F. E. Partridge Rubber Co., Limited.

THE RUBBER TRADE IN OHIO.

By Our Regular Correspondent.

THE rubber companies of Akron helped the Fourth Federal District go over the top in the recent drive for the Victory Liberty Loan, in their usual enthusiastic style.

The B. F. Goodrich Co. opened its campaign with a Victory Loan dinner, at which the now famous poem "In Flanders Fields" was recited. L. M. Barton, chairman of the campaign, presided, and outlined the Goodrich schedule. When informed that each rubber company would be allowed a week to make up its quota, the Goodrich officials declared that two days were enough for them. Over 1,400 new employees had purchased \$100,000 of bonds before the drive began.

The American Rubber & Tire Co. subscribed its entire quota on the first day of the drive, totaling 30 per cent more than in the previous drive.

Firestone Tire & Rubber Co. made use of its band in raising its quota, totaling over a millions dollars, in a three-day campaign.

The Miller Rubber Co. started its campaign with a series of short speeches, which were enthusiastically received.

The Goodyear Tire & Rubber Co., through officers and employees, subscribed \$2,000,000. 19 departments raising from \$10,000 to \$50,000 apiece.

AKRON NOTES.

The Firestone Tire & Rubber Co., Akron, is planning to develop an athletic field for the benefit of its employes, to be located in Firestone Park, but it is not expected that the plans can be carried out this summer.

* * *

The India Tire & Rubber Co., Akron and Mogadore, has increased its capital from \$500,000 to \$1,500,000.

* * *

The General Tire & Rubber Co., Akron, is to build an addition to its plant in the near future.

* * *

The Dri-Cure Retreading Co., 405 East Market street, Akron, has been formed by H. B. Houghton, Jr., E. M. Harbin and M. L. Cope, three former employes of The B. F. Goodrich Co. It will distribute the product of the Western Vulcanizer Co., Chicago, in its territory, which includes Indiana, Michigan, Pennsylvania, and New York, as well as Ohio.

* * *

The National Aniline & Chemical Co., Inc., New York City, manufacturer of chemicals for the rubber trade, has opened a branch office in the People's Savings & Trust Building, Akron, in charge of H. H. Replogle.

* * *

The Biggs Boiler Works Co., Akron, Ohio, manufacturer of vulcanizers, et cetera, has purchased the equipment for the new addition to its plant.

* * *

Alexander Adamson, head of the Adamson Machine Co., Akron, and Mrs. Adamson, have donated funds for the purchase of a site for a girl's training school and dormitory at Laoag, Philippine Islands, where their daughter, Miss Vera Adamson, is a missionary.

* * *

Arnold H. Smith, until recently assistant chemist in the Bureau of Standards, Washington, D. C., has resigned to accept a position as research chemist with The Goodyear Tire & Rubber Co., Akron. Mr. Smith is secretary of the Rubber Division of the American Chemical Society.

F. A. Seiberling, president of The Goodyear Tire & Rubber Co., Akron, Ohio, was unanimously reelected president of the Lincoln Highway Association at its annual election.

In the recent balloon race from the naval air station at Wingfoot Lake, Akron, on Saturday, May 10, 1919, the S-20, known as the "City of Akron," was entered by John R. Gammer inventor of many models for rubber machinery, the Gammer balloon valve, etc. The S-20 landed near Clayton, Delaware.

CLEVELAND NOTES.

The Union Tire & Rubber Co. has purchased a factory site on the Nickel Plate Railroad, near Chardon Road, Cleveland, where it will build in the near future. R. J. Birch, Hippodrome building, Cleveland, will be general manager.

* * *

The Osborn Engineering Co., Cleveland, reports great activity among rubber companies, which are increasing their factory space or building new plants to take care of additional business.

* * *

The Jackson Tire & Rubber Co., Cleveland, has increased its capital from \$10,000 to \$20,000.

* * *

A. G. Spalding & Bros., New York City, dealers in sporting goods, have removed their Cleveland store to the Statler Hotel Building.

* * *

Charles R. Sargent & Co., Engineers Building, Cleveland, has been formed by Charles R. Sargent, recently general manager of Stresen-Reuter & Hancock, Inc. The new company has bought the Cleveland end of the business of Stresen-Reuter & Hancock, Inc., in chemicals, oils and colors, and has taken over the employes of the Cleveland branch.

MISCELLANEOUS OHIO NOTES.

The Faultess Rubber Co., Ashland, Ohio, is enlarging its plant to take care of increasing business.

* * *

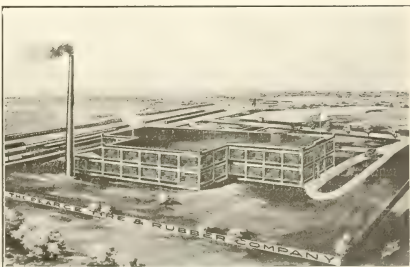
The Rubber Products Co., Barberton, Ohio, is building an addition to its plant, 60 by 100 feet, besides several smaller structures and an office building.

* * *

The Mason Tire & Rubber Co., Kent, Ohio, has recently awarded a contract for an addition to its plant.

* * *

The Pearce Tire & Rubber Co., Ashtabula, Ohio, called a special meeting of its stockholders in April to increase its



PLANT OF PEARCE TIRE & RUBBER CO.

capital stock from \$1,000,000 to care for the many improvements it is planning. Two new buildings are soon to be erected, a warehouse and a two-story office building, and a 66-inch calender and two extra mills are to be installed in the present main building, together with three additional

vulcanizers. The officers of the company are: A. M. Pearce, president and general manager; Charles L. Foster, vice-president; M. H. Sullivan, assistant general manager, and W. E. Wilkins, secretary.

The Toledo Auto Fabrics Co., Toledo, Ohio, has increased its capital from \$150,000 to \$225,000.

The Tubeless Tire and Rubber Co., Millersburg, Ohio, has elected the following officers: W. A. Miller, president; G. B. Helmuth, vice-president; O. J. Hicks, second vice-president, and G. A. Jordan, secretary-treasurer.

The Security Tire & Rubber Co., Wellington, Ohio, manufacturer of the "Security" no-air tube, elected the following directors and officers at its annual meeting: Edwin L. Camp, president; R. B. McNerny, vice-president; George J. Quay, secretary and general manager; S. Sudro, William H. Hill, Harry Gresham and W. W. Parker. The company is now in its third year of operation, having been incorporated in Delaware, in 1916, with a capitalization of \$1,000,000.

The Monarch Rubber Co., Carrollton, Ohio, recently bought the plant of the BeSaw Tire & Rubber Co., at Hartsville, including real estate and materials on hand, at an approximate cost of \$200,000. The plant has been remodeled and new machinery installed. Additional building equipment is planned to increase the capacity of the plant.

The BeSaw company has no connection with the Monarch concern and will continue to operate its present plant at Ardmore, Oklahoma.

The Lancaster Tire and Rubber Co., Columbus, Ohio, has increased its capital from \$500,000 to \$800,000, of which \$200,000 is original preferred and \$600,000 common stock.

The Mansfield Tire & Rubber Co., Mansfield, Ohio, has approved plans for the construction of an addition to its present plant, to be of steel, brick and glass, four stories high. Additional ground has been purchased north of the present plant, making a total holding of nine acres.

The Fidelity Tire & Rubber Co., Massillon, Ohio, has leased the plant of the Kendall Tire & Rubber Co. in that place and will manufacture Ford-size tires.

The Erie Tire & Rubber Co., Sandusky, Ohio, is having plans prepared for an addition to its factory.

The Henderson Tire & Rubber Co., Inc., Bucyrus, Ohio, has increased its capital from \$200,000 to \$350,000.

NEW MAXOTIRE FACTORY.

The K & W Rubber Co., Ashland, Ohio, one of the pioneer manufacturers of tire reinforcements, has purchased more than ten acres of land along the Big Four tracks in Delaware, Ohio,



FACTORY OF K & W RUBBER CO.

and erected a modern factory for the manufacture of the "Maxotire," a successful inside tire. The accompanying photograph shows the new building, which is devoted exclusively to the making of tire reinforcements. The company has moved its general offices and equipment into the new quarters, and machinery is rapidly being installed with which to run all kinds of rubber stock needed.

JOHN MORGAN, McGRAW'S VICE-PRESIDENT.

JOHN MORGAN, who was elected a director of The Rubber Association of America at the annual meeting, was born in London, England, in 1880. Educated privately, he was later graduated from the City of London College with honors and completed his education by travel in the different countries of Europe.



JOHN MORGAN

He became secretary to a leading member of the European Diplomatic Corps, with headquarters in Paris, France, during which association extensive travels throughout Europe enabled him to make a very broad study of the customs and languages of the European nations.

Coming to America in 1905, he became interested in the importation of high-grade foreign automobiles, and perceiving the possibilities of the American automobile industry, he was instrumental in introducing the Kempshall tire into America in 1906. This connection led to his association with The McGraw Tire & Rubber Co., East Palestine and Cleveland, Ohio, with whom he has spent his time exclusively for the past ten years. He was elected treasurer of the company in 1913, and vice-president the following year, which office he now holds. Mr. Morgan has interests also in large textile industries and the manufacture of electrical appliances.

A SPECIALIST IN RUBBER CHEMICALS.

RALPH L. FULLER, of Ralph L. Fuller & Co., Inc., Cleveland, Ohio, is well known throughout the rubber and chemical trades of the United States and Canada.

His introduction to chemicals dates back to the summer of 1880, when he took temporary work with the well-known wholesale drug house of Strong, Cobb & Co., Cleveland, continuing to do so each vacation for five years. In this way, he became familiar with the various chemicals and at the same time acquiring a knowledge of chemistry in school and subsequently at college.



RALPH L. FULLER.

Having finished his college course he returned to Messrs. Strong, Cobb & Co., and was assigned to the order department, then to the position of keeping costs, and finally he was given a permanent position in the sales department. Later he with others formed the Cleveland Commercial Co., of which he was secretary. The success of this business was such that it became necessary to increase the organization and in 1892, the Harshaw, Fuller & Goodwin Co. was organized and succeeded the Cleveland Commercial Co.

Soon after the present war started, it occurred to Mr. Fuller that with the advent of a large number of new manufacturing concerns, particularly of chemicals, a further change in business methods could be adopted to the advantage of manufacturers and consumers of those products, and accordingly, with some of his associates he organized Ralph L. Fuller & Co., Inc., to act

as purchasing and sales agents for various manufacturers and jobbers interested in the purchases and sales of chemicals, oils, pigments, etc. His judgment in this respect has been justified, for the history of Ralph L. Fuller & Co., Inc., seems to indicate that where the finished products of one manufacturer are so frequently the raw materials of another, the bringing together of the two producing firms and production through a common handling agency is mutually advantageous.

Mr. Fuller has a wide acquaintanceship, and hosts of friends. He is a director of the Guardian Savings & Trust Co. of Cleveland, and also the Cleveland National Bank. He is an ex-president of the Cleveland Chamber of Commerce.

THE RUBBER TRADE IN MASSACHUSETTS.

By Our Regular Correspondent.

ABOUT the first of last month, it was reported that Lockwood, Greene & Co., had purchased the Roxbury Carpet Co., which purchase included the plant and business of the Boston Belting Corp. Investigation confirmed the sale of the carpet company but that neither the Boston Belting Corp. as such, nor its stock held by the carpet company had been included in the transaction, being still held largely by the Simpson Estate, from which the carpet company was purchased some time ago by Willett, Sears & Co., for a cash payment, it is said, of \$700,000, and notes for a like amount.

Mr. Willett later purchased the Boston Belting Co., buying up the stock by paying therefor a sum in cash and an amount of preferred stock in a new corporation named the Boston Belting Corporation. He sold to the Roxbury Carpet Co. the common stock of the belting corporation for \$500,000, which money went to pay the above-mentioned cash payments to the belting company's stockholders. It is now understood that the present holders of the majority of the belting corporation stock are anxious to sell the plant and business.

Among the assets of the Boston Belting Corp. is a large block of stock of the Plymouth Rubber Co., which is valued around \$50,000, though its face value is somewhat higher. Another possible asset of large value is the water-power privilege which the old company has held for many years, and which, by the terms of its contract, may be bought by the city of Boston within a few years for such sum as may be estimated to be its value at that time.

Another possible asset is a claim of \$350,000 against the Industrial Service and Equipment Co., against which a petition in bankruptcy has been filed by the belting corporation and two other concerns formerly controlled by Willett, Sears & Co. The Industrial Service and Equipment Co. was also a Willett-Sears concern, which was placed in the hands of receivers, in equity, last February. It is understood that the dividends on the preferred stock of the Boston Belting Corp., so far, have been paid from the earnings, as they became due and that the corporation is continuing business as heretofore and pushing for foreign trade, with encouraging results.

The Needham Tire Co., Charles River, Massachusetts, is building a one-story addition to give it 13,000 square feet of additional space for operating purposes. The company is also building a 150-foot smoke-stack to replace its present chimney. An additional 250-horse power boiler and other equipment for making tires are being installed, as well as nine more presses for making fiber soles and rubber heels.

Everlastik, Inc., manufacturer of elastic webbing, dedicated its new Victory Mill at Chelsea, a suburb of Boston, on April 30, by appropriate addresses, dancing, and refreshments. When the armistice was signed, work was begun on this mill, and in the succeeding five months there has risen a handsome three-story factory of modern mill construction. It will be equipped with

warping and winding machinery, as well as looms for making elastic and non-elastic webs, automobile brake linings, etc. The street floor on the Webster avenue side will contain the offices and the machine shop. All the machinery will be driven by individual electric motors, and, of course, the mill will be lighted by electricity. Special attention has been paid to arrangements for the comfort of the employees.

According to the fourth annual report of the Forsyth Dental Infirmary, that institution continues its philanthropic work among the poor children of Boston, having treated over 25,000 cases during the year 1918, and starting that number of children in the proper way to preserve their teeth. The enforced closing of the institution for some weeks because of the influenza epidemic, and the reducing of the permanent staff because of the call to service in the Army Dental Corps reduced somewhat the number of cases treated. Forsyth Day, the anniversary of the presentation of the loving cup to the surviving founder, Thomas A. Forsyth, for many years connected with the Boston Belting Corp., was celebrated by special clinics which brought together several hundred New England dentists.

At the annual meeting of the Crocker Rubber Co., held at Brockton, Massachusetts, May 14, 1919, the following officers were elected: president, O. W. Holmes, Brockton; treasurer, H. J. Callahan, Salem—both in Massachusetts, and secretary, M. R. Henry, Providence, Rhode Island. This company specializes in rubber boots of all kinds and has been located in Brockton since 1904. It is one of the eleven stores of the Crocker System. O. W. Holmes has been with the Crocker Rubber Co. for twelve years. Besides his duties as president he will act as manager. Mr. Callahan, the treasurer, holds a like office with the Salem Rubber Co., of which Mr. Henry is secretary.

The Davidson Rubber Co., Charlestown, has sold to A. Francis Harrington the stock, tools, and machinery of the Sterling Fountain Pen Co., which has been run as a subsidiary of the Davidson Rubber Co. for the past eighteen years. Mr. Harrington, a Boston lawyer, at this writing is sole owner of the pen business, but he proposes to form a stock company, under the name of the Sterling Fountain Pen Co., which will continue the business, with factory and office at 15 Brattle Square, Boston.

The Berkshire Rubber Co., Pittsfield, Massachusetts, controls or owns The Berkshire Rubber Co. of New York, Inc., The Hoosac Auto Supply Co., North Adams, Massachusetts, and the newly incorporated Holcomb Rubber Co., 713 Albany avenue, Hartford, Connecticut. The officers of the Berkshire company are: Richard Prosser, president, New York; Albert Wurts, treasurer; Frank Prosser, secretary, New York.

A most effective instance of window advertising of automobile tires was the display staged by the Boston branch of The Miller Rubber Co., Akron, Ohio. The tires were shown in the window of a leading florist's store and the combination of tires, ribbons, flowers and greenery, backed by a landscape which blended with the foreground, was very effective. The name of the tires was just conspicuous enough to advertise them effectively without detracting from the beauty of the display.

James H. Learned, of the United States Rubber Co., who went to Europe in April on business connected with the rubber thread department, returned the middle of last month. He visited England and France, and, like most Americans now going across, spent a considerable portion of his time ashore in attending to his passport requirements. He experienced the same difficulties as others in regard to traveling and hotel accommodations, but found his customers ready to do business, and reports the outlook for future orders most encouraging.

APPLETON: "ANCIENT AND HONORABLE."

CAPTAIN FRANCIS HAWKES APPLETON, veteran in military affairs and in reclaiming, was born in Jersey City, New Jersey, August, 4, 1853. He attended the public schools of that city, finishing his education at Pennington Academy, Pennington, New Jersey, and after some years in a wholesale grocery house, he entered the employ of the Murphy Varnish Co., Newark, New Jersey, as bookkeeper. After two years in this position he became traveling salesman for the same concern, and during the next seven years sold varnishes in practically every state in the Union. The succeeding six years found him managing the Boston branch of the Murphy company, a branch which he established.



FRANCIS H. APPLETON

In 1898, Mr. Appleton established a rubber reclaiming factory at Franklin, Massachusetts, and in 1902 he took in his son and namesake as partner, the firm being F. H. Appleton & Son. This concern was afterwards incorporated and has ever since been a prominent factor in the reclaiming industry.

In military and Masonic affairs, Mr. Appleton has been very prominent. He is a veteran of the Seventh Regiment, New York's crack militia regiment, and when he located in Boston he joined the Ancient and Honorable Artillery. He was one of a committee of three who went to England to present to King George V. a certificate of honorary membership in this famous Boston organization. Two years later he was chosen captain at the "drum-head election" held on Boston Common, and in July, at the head of 100 men, sailed on a peaceful invasion of England to hobnob with the parent organization in London, and to dine with the King and other dignitaries.

Mr. Appleton was a charter member of the Rubber Reclaimers Club, being temporary president during the formation of that trade body, and for several years was treasurer. When the club became the Reclaimers' Division of The Rubber Association of America, he was elected chairman, a position he now holds. He is also one of the original members of the New England Shoe and Leather Club.

Mr. Appleton is a 32nd-degree Mason, and is Chief Rabbi of Aleppo Temple, Ancient Arabic Order of the Mystic Shrine. He is also a member of the Algonquin, Boston Athletic, City, Commonwealth, Country, and Point Shirley clubs.

PACIFIC COAST NOTES.

THE one topic of conversation among the tire and rubber firms is the sudden reduction in tire prices, which came like a bombshell on automobile row. The announcement of the United States Rubber Co. of a 15 per cent reduction was followed immediately by that of other companies, and the buying public immediately sat up and began to take notice. The report to the effect that this reduction was likely to be followed by another, put a stop to tire buying for the time being, except in emergency cases, and branch managers of the high-grade tire companies professed to be at sea as to the present, although all looked for a further reduction.

Meanwhile the companies selling "seconds" and the rebuilding and retreading firms were panic-stricken, realizing there would not be a great demand for their products when users could buy "firsts" for a little more than "seconds" and rebuilds. It is ex-

pected that automobile owners will stock up for the summer and fall, as this is the first reduction from the prevailing war prices. There are more automobiles in this part of the state than in all the rest of California and the owners will not be slow to take advantage of the opportunity given them to make a legitimate saving.

One of the large rubber companies states that the reduction is not likely to affect other lines of rubber goods, such as clothing and footwear, and that prices on these may go higher. Automobile owners are asking whether price reduction will extend to other automobile products.

R. H. Keaton, president of the Keaton Tire & Rubber Co., Akron, Ohio, stopped over in Los Angeles for a few hours, on his way East to attend the opening of a Keaton headquarters in Chicago, Illinois. The Los Angeles branch, now located at 437-39 West Pico street, will be enlarged.

"Our rim business is growing so that we find it necessary to establish a central handling and shipping point in the East," said Mr. Keaton. "We have decided to open a Chicago branch that will enable us to handle our steel shipments better, as well as the 'East of the Rockies' demand for our tires. Our factory output is the only thing that is keeping us back, as we are unable at present to supply the demand."

E. R. Baker, sales manager, Western Auto Supply Agency, Los Angeles, is handling a device manufactured in that city for carrying a spare tire, which is particularly adapted to the Ford car that comes from the factory with no such appliance. Many Ford users carry their extra tires strapped on the running board or hanging from the side, an expensive way to carry a spare tire which may injure the carcass, to say nothing of the question of appearance.

The Oldfield Tire Co. has removed its Los Angeles offices to its tire warehouse at 228 Los Angeles street. The new offices and warehouses are large enough to hold nine carloads, or over \$360,000 worth, of Oldfield tires and tubes. The Oldfield retail store and vulcanizing shop on Hope street has been sold to Hewitt & Kinslow, experienced tiremen who will continue the repairing and retreading business.

Max Shiffner of the Tire Company of California, Los Angeles, reports the sale of twice as many tires for the month of April as in any previous month in its history.

F. C. Milhoff, general sales manager, Miller Rubber Co., Akron, Ohio, who recently spent a few days in Los Angeles, predicts an unprecedented sale of tires during the next few months and declares that millions of dollars of back orders must shortly be filled.

Thomas L. Rich, agent for Thermoid tires, spent several days on an extended trip through the northern part of his district, and reports a general feeling of optimism in the rubber trade.

C. Fred Thompson has returned to Los Angeles from a trip among Mason tire dealers throughout Southern California, and reports an increased use of Masons through the desert and mountain country of his district.

The steady development of the cotton-growing industry in Arizona and the Imperial Valley has at last resulted in the announcement that a Boston textile firm will construct a cotton mill in the Los Angeles-Long Beach Harbor district with spindles sufficient to employ 1,000 workers. It is said an option has been acquired on 20 acres of land and that \$3,000,000 will be invested in the project which includes the building of a colony of homes for the accommodation of the workers.

That the project will be greeted as a boon by the cotton growers of the Southwest goes without saying. It is the belief in industrial circles of Los Angeles that cotton raised and baled in Arizona and the Imperial Valley will eventually find its way to the mills of the Orient. It is pointed out that California has every element to make the manufacture of textiles and fabrics profitable, cheap electrical power, abundant labor, the raw product within easy haul, and climatic conditions that manufacturers have come to understand as a compelling economic factor in both mill construction and factory production.

With the growth of the tire manufacturing business in the West, the establishment of a textile factory here seems to be dictated by wisdom and confidence in the future.

The Bowers Rubber Works, which began business in San Francisco in 1888, has changed its name to the Pioneer Rubber Mills. Its factory is at Pittsburg, Contra Costa County, California, on the Sacramento River, and its general offices are at 68 Sacramento street, San Francisco, while it maintains factory sales offices in Los Angeles, Portland (Oregon), Tacoma and Seattle, Salt Lake City and Denver. The company manufactures "Skookum" piston-rod packing, "Copper Queen" belting and "Victor" fire hose. George N. Towne is vice-president and general manager and D. D. Tripp is vice-president in charge of sales. Mr. Towne visited New York City last month.

The Savage Tire Corp., San Diego, California, manufacturer of "Savage" tires and "Grafinite" tubes, has made the following promotions and appointments: J. E. Shaw, from assistant sales manager to sales manager; L. S. Chamberlain, assistant sales manager; H. E. Gressler to succeed Mr. Chamberlain as manager of San Diego branch; A. E. Kelley transferred as branch manager from Seattle to San Francisco; J. C. Magly to succeed Mr. Kelley at Seattle.

The Western Rubber Co., 1143 Dock street, Tacoma, Washington, which for nearly two years has been conducting a tire-rebuilding business, is now planning the erection of a \$300,000 unit of its future plant. Elmer Dover is president. He is at present on a business trip East in connection with the new factory. The company uses among other things a special composition of which one of the principal ingredients is fish scrap. Several chemical patents have been issued on this composition.

An important branch managers' conference was recently concluded in Los Angeles by H. S. Firestone, president of the Firestone Tire & Rubber Co., Akron, Ohio, and district manager J. D. Hess, Jr., from the Akron factory. Mr. Hess will spend the greater part of his time here watching the trade conditions of the Pacific Coast branch territories.

One hundred high-grade rubber tires a day are now being turned out by the Hendrie Rubber Co., Los Angeles, which has again opened its plant at Torrance after a period of inactivity caused by closing down on account of the war. Plans are being made to more than double its capacity and a much larger force of men will be put to work in the next month or two. The company has a large and commodious building with all modern appliances and has laid in a big stock of rubber and fabrics preparatory to starting active work.

Thomas L. Rich, for years one of the best known tire dealers of Los Angeles, has been chosen as the Southern California distributor of Thermoid casings and tubes.

Hawley, King & Co., Los Angeles, have been appointed distributors in California, Arizona, and Nevada for the Globe

tire. Reeve Gartzmann, general manager of Hawley, King & Co., will supervise the tire department, and H. H. Anderson, formerly of the Firestone organization, is sales manager. A. T. Smith, former manager of the Los Angeles branch and later Pacific Coast manager of the Firestone company, is western manager of the Globe Rubber Tire Manufacturing Co. The Globe company announces that in addition to its fabric and cord tires it will soon manufacture a solid tire as well.

The Pacific Rubber Co., Los Angeles, has arranged for storehouse facilities for "Horseshoe" tires in San Francisco to facilitate their distribution in the northern part of the state, according to Roy R. Meads, president and general manager of the concern, who has returned from an extended business trip through that section.

A big shipment of reconstructed tires for Japan has just been made up by the Tire Construction Co. of Los Angeles. "This shows what a tremendous export we may expect in the future," says Edward Harris of that company. "We on the Coast come in contact with the buyers from the Hawaiian Islands, Japan and China, who come here for the latest information on vulcanization methods and repairing."

F. C. Morrison of the Miller Tire Sales Co. reports eighteen new agencies recently installed in this territory, the latest being that of Goodell & Mead at Pasadena.

Steward Slosson has been appointed Pacific Coast representative of The Rubber Products Co., Barberton, Ohio, manufacturer of tires and mechanical rubber goods, and will take charge of the company's business in "Stronghold" tires.

W. H. Gilbert, treasurer of the Pacific Coast division of the United States Rubber Co., San Francisco, according to his usual custom, is spending a portion of the early summer resting in Los Angeles.

THE RUBBER TRADE IN NEW JERSEY.

By Our Regular Correspondent

THE Trenton rubber manufacturers are proud of the fact that they went over the top in subscribing for the Fifth Liberty Loan. Their subscriptions amounted to nearly half a million dollars, or to be exact, \$423,350. The list follows:

Ajax Rubber Co., Inc.	\$100,000
Joseph Stokes Rubber Co.	100,000
Empire Rubber & Tire Corp.	40,000
Thermoid Rubber Co.	40,000
United & Globe Rubber Co.	30,000
Hose Rubber Co.	17,500
Delton Tire & Rubber Co.	15,650
Essex Rubber Co.	9,000
Whiteland Brothers Rubber Co.	8,850
Woven Steel Hose & Rubber Co.	5,950
Semple Rubber Co.	5,800
Globe Rubber Tire Manufacturing Co.	5,300
Mercer Rubber Co.	5,100

\$423,350

The United & Globe Rubber Co. will erect a brick addition to the plant on Frazer street, Trenton.

Horace B. Tobin, secretary and treasurer of the United & Globe Rubber Co., Trenton, and who is also president of the Trenton Club, recently entertained the members of that organization at the Country Club at Spring Lake, New Jersey.

The Atlas Tire & Rubber Co., Trenton, has begun work on its new \$250,000 plant on Enterprise avenue. Work will be rushed to completion and machinery installed as soon as possible. The company will manufacture automobile tires and tubes, and employ about 200 persons at the start. One

of the structures will be 90 by 360 feet; another, the engine and boiler room, will be 82 by 92 feet. There will be an 800-foot siding. Henry A. Ludeke is president of the Atlas company; Ira Worthington, vice-president, and R. Unkles, secretary.

At the annual meeting of the Globe Rubber Tire Manufacturing Co., Trenton, New Jersey, Joseph B. Linerd was reelected president. He is said to be the youngest president



JOSEPH B. LINERD.

of any such important enterprise in this country. Young as he is, however, he has had a good business experience. Previous to his connection with the Globe company, he held various responsible positions with the Goodyear Tire & Rubber Co., Akron, Ohio, and later became sales manager of the Ajax Rubber Co., Inc., Trenton, New Jersey. In 1916, he reorganized the Globe Rubber Tire Manufacturing Co. and served first as its general sales manager, later being chosen president, to which office he has just been reelected.

Solomon J. Lewis, representing the Sturdy Tire & Rubber Co., of Trenton, recently returned from Havana, Cuba, where he closed a \$300,000 contract with the Caribbean Agencies.

The Eureka Tire Co., 26 West State street, Trenton, New Jersey, whose plant is on Whitehead's Road, has filed a certificate of dissolution in the office of the Secretary of State, as agreed upon by the stockholders.

The New Jersey Car Spring & Rubber Co., Inc., Jersey City, New Jersey, has elected the following officers and directors: G. W. Stephens, president; F. H. Smith, vice-president and general manager; E. E. Dearth, secretary; Charles Hoffman and Jesse E. La Dow, counsel; directors—John J. Fields, F. H. Smith, E. E. Dearth, Jesse E. La Dow, Charles Hoffman, G. W. Stephens and P. H. Ober.

William J. B. Stokes, head of the Thermoid, Stokes and Home Rubber companies, Trenton, who was chairman of the Fifth Liberty Loan Committee, will shortly entertain those who aided him in the work.

Alfred Whitehead, secretary of Whitehead Brothers Rubber Co., Trenton, was chairman of the rubber manufacturers' division of the Salvation Army drive.

The storehouse of the Empire Rubber & Tire Corp., Trenton, was badly damaged by fire on May 19, the principal loss being caused by water from the sprinkling system.

Samuel E. Lavery, formerly manager of the Allentown, Pennsylvania, branch of the United Tire Co., has purchased a building on West End avenue, Trenton, and will conduct a plant there.

Harry L. Midler, formerly owner of the Midler Auto Supply Co., Trenton, has been held in the Federal Court on a charge of perjury in bankruptcy proceedings. He was held in \$1,000 bail. A petition in bankruptcy against the Midler

company was filed by the Pennsylvania Rubber Co. early in 1918.

The plant formerly occupied by George F. Lufberry, Jr., Meadow Lane, Elizabeth, New Jersey, has been sold to the Lowenstein Radio Co., of Newark. The transaction involves nine acres of land and twelve buildings.

The Victory Tire & Rubber Co., 385 East 149th street, New York City, has plans for the erection of a tire plant on Railroad avenue, Asbury Park. The building will be two stories high, 75 by 165 feet, and will cost \$125,000.

Elgin L. McBurney, receiver of the Indian Tire & Rubber Co., New Brunswick, has made application to the Court of Chancery for permission to borrow \$5,000 on a receiver's certificate. An order to show cause why the court should not allow this and order the business to continue for the disposal of the property of the corporation has been obtained by some of the stockholders. It is alleged that the assets of the company total \$107,115, and its liabilities \$65,000.

THE RUBBER TRADE IN RHODE ISLAND.

By Our Regular Correspondent.

WHILE the several plants manufacturing rubber goods in Rhode Island have many orders on their books, they also have more or less stock on hand and are playing somewhat of a waiting game. Advantage is being taken of this to make repairs, renovations, improvements, and additions as well as complete accounts of stock of every description which have not been taken as thoroughly as usual for the past two years or more because of the drive under war conditions.

In common with other industries the rubber manufacturers are finding much difficulty in securing experienced help to fill numerous places that are vacant. Several hundred employees left the several plants to go into the service of the country, either as volunteers or draftees, and it is expected that with their return they would seek their former positions. This has not proved to be the case, however. While a few have applied for and resumed their former employment, a large majority do not desire to resume indoor work, and so are seeking for something to do outside.

The efforts to take Rhode Island over the top in the Fifth Liberty loan by the subscription for a quota of \$37,000,000 of Victory Notes gave all industrial interests considerable activity. Early in the campaign the announcement was made from New York that the United States Rubber Co. had subscribed for \$2,500,000 of the bonds, of which \$1,500,000 was to be credited to the various States where the company had plants. Later it was announced that of this sum \$500,000 had been credited to Rhode Island. In the distribution Providence, where the Revere Rubber and Mechanical Fabric Companies are located, received credit for \$200,000, while Woonsocket with the Woonsocket Rubber Co.; and Bristol with the National India Rubber Co., each received credit for \$150,000.

Edward P. Gwillam, of Newark, N. J., appeared before Judge Arthur L. Brown in the United States District Court this city, about the first of the month and pleaded not guilty of conspiring to bribe a United States official. He was released when \$1,500 bail was furnished. Mr. Gwillam is general manager of the Newark Raincoat Co., whose local representative, Samuel Levison, was arrested here last summer on charges of attempting to bribe a United States officer in connection with a raid that was made. Mr. Levison informed the Government officials here that Mr. Gwillam conspired with him in the bribing.

The shoe division of the National India Rubber Co.'s factory at Bristol, was closed on Friday, May 16, for two weeks, resuming Monday, June 2. The announcement was made by the management that the shut-down of the two sections of the division was to curtail production and for general repairs. During the period of the shut-down the company continued to make samples and small productions of particular grades of shoes.

The Revere Rubber Co. of the United States Rubber System, has just added another plot of land to its holdings on Valley and Eagle streets, Providence. It is located at the northeast corner of the two thoroughfares and contains 3,506 square feet. It is a valuable acquisition as it completes the holdings of the concern on that block.

The Davol Rubber Co. of Providence, has just received a large contract to furnish ice bags to the Medical and Hospital Supplies Division, Office of the Director of Purchase and Storage, at Washington.

CONNECTICUT NOTES.

The Raybestos Co., Bridgeport, Connecticut, manufacturer of brake linings and clutch facings, is building a one-story brick and steel addition to its factory, 160 by 170 feet, to cost approximately \$75,000.

The Goodyear Rubber Co., Middletown, Connecticut, is expending about \$10,000 in enlarging its cutting room.

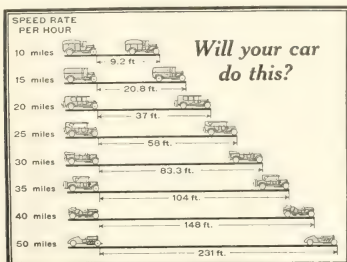
The New Haven Sherardizing Co., New Haven, Connecticut, has increased its capital from \$30,000 to \$50,000.

NEMOURS TRADING CORP. OPENING FOREIGN OFFICES.

The Nemours Trading Corp., 151 Fifth avenue, New York City, recently incorporated to do a general export business, in addition to its branch offices in the principal foreign cities, has opened a house in Mexico City and will open others in Johannesburg, South Africa, and Melbourne, Australia, early in the autumn. W. P. Berrien, export sales manager, was for eight years connected with the Firestone Tire & Rubber Co. Among other products the Nemours corporation will specialize in Perfection tires, made by the Perfection Tire and Rubber Co., Fort Madison, Iowa.

WHAT GOOD BRAKE LININGS SHOULD DO.

The accompanying chart, published by the Thermoid Rubber Co., Trenton, New Jersey, and showing the distance within which it should be possible to stop an automobile traveling at various speeds when equipped with suitable brake linings, is of interest to associations, railroads, and motorists in general. It was prepared to show in a graphic manner how directly the safety of the car and the security of all who ride depend upon the brake linings, and also to provide a fair and reliable test which every motorist can easily make with his own car.



A RUBBER RESEARCH SPECIALIST.

AMONG AMERICAN RUBBER CHEMISTS the name of George D. Kratz is recognized as that of a rubber research chemist of ability. Following his graduation from Cornell University in 1912 with the degree of Bachelor



GEORGE D. KRATZ.

of Chemistry, Mr. Kratz began his professional career with the former Diamond Rubber Co. in his native city of Akron, Ohio, continuing as one of the laboratory staff of The B. F. Goodrich Co., after the absorption of the former concern by the latter. In 1914 he became chemist of the Norwalk Tire & Rubber Co., Norwalk, Connecticut, three years later assuming the duties of chief chemist of the Falls Rubber Co., Cuyahoga Falls, Ohio, which position he holds at the present time.

In research work Mr. Kratz has been associated with Dr. David Spence and in collaboration with him has published many articles on chemical research. He has contributed frequently to the "Journal of Physical Chemistry," the "India Rubber Review," and THE INDIA RUBBER WORLD.

He is a member of the American Chemical Society, The New Jersey Chemical Society, the University Club of Akron, and the Cornell University Club, New York City.

THE OBITUARY RECORD.

A RUBBER MAN OF THE THIRD GENERATION.

JOHN V. ALDEN died at Buffalo, Wyoming, May 12, in his 31st year. He was the only son of Adelbert H. Alden and grandson of the late George A. Alden, the well-known rubber merchants, and at one time was president of the Seamless Rubber Co., New Haven, Connecticut. His health failing, he went west some years ago, and it was thought he was recovering. He came East to welcome his father on the latter's return from abroad a short time ago, but death took him soon after his return to Wyoming.

A PROMINENT FABRIC COMMISSION MERCHANT.

Augustus D. Juilliard, senior member of A. D. Juilliard & Co., New York City, manufacturers and distributors of cotton fabrics for the rubber goods manufacturing trade, died at his home in that city, April 25, 1919, after a brief illness.

He was the son of Jean Nicholas Juilliard, a native of Burgundy, France, who came to America in the early 'forties. Born in Canton, Ohio, seventy years ago, Augustus D. Juilliard early identified himself with the textile commission business. In 1873 he was appointed receiver for Hoyt, Sprague & Co., at that time the largest commission house in New York City, and soon after organized his own company. During the presidential campaign of 1896 he became prominent as a strong protectionist and a friend and ardent supporter of McKinley. Later he became prominent in connection with banking, trust and insurance interests, and was a liberal patron in musical, artistic, scientific and educational movements. He organized the American Protective Tariff League, and maintained its high protective principles in all legislation regarding the textile industry.

Mr. Juilliard was a member of the Metropolitan, Union League, Tuxedo, City, Republican, Merchants, and the New York Athletic Clubs, the Ohio Society of New York, and the Huguenot Society of America.

The Rubber Trade in Great Britain.

By Our Regular Correspondent.

THE only feature of new interest in the present low-level price of rubber is the attention being given to finding some new uses for it. The Rubber Growers' Association is moving in the matter, but the prize scheme it is said to be preparing has not yet seen the light. It seems obvious that something besides rubber pavements will be required to absorb rubber to the extent desired, and the position as regards the price of finished articles is not the same as it was when the rubber pavement was being advocated some years ago as a panacea for increased output. The new expenses associated with labor have to be considered, and it may be that they will press more heavily upon rubber as a pavement material than upon its present competitors.

In contrast to what has occurred in some industries, demobilized rubber workers are being regularly reinstated in their old jobs, the positions being vacated by the women workers who had occupied them. A point which came up at a recent general meeting of the Whitley Council was in regard to the propriety or expediency of replacing women by temporary men until the original holder of the position was available. A prominent rubber manufacturer, who said that he was reducing the woman staff regularly in favor of returned men, agreed with Mr. Duke, the rubber workers' secretary, that it was not advisable to dismiss women in favor of temporary men. Among those who are drawing the much-talked-of out-of-work donations are a good many rubber workers, mostly from the proofing side. These do not come from works generally, as some firms have not dismissed any hands. The fact is at this time of general upset that some firms are busier than others. Although the war rush has, of course, subsided, Government peace orders are coming forward as usual and these are naturally on a larger scale than they used to be. Under present conditions some firms have much of their work on hand, while others may have little or none, hence the effect on the labor required at different works.

NEW WORKS.

Now that the government restrictions on the issue of capital for new ventures have been removed, as far as Great Britain is concerned, we may expect to see some schemes put before the public. A recent one is the offer of £200,000 8 per cent cumulative participating preference shares in Fuller's United Electric Works, Limited. Part of the works which are at Chadwell Heath, Essex, were started during the war for the manufacture *inter alia* of ebonite, insulated electric cables and carbon black, and seem to have made very good progress, being helped naturally by the scarcity of ebonite and gas black. The fact that the four companies which are now merged into one earned 30 per cent upon their capital in 1918 must of course be looked upon by investors in the light of war demands and prices and the absence of difficulties of foreign competition. The names of the companies now merged are: John C. Fuller & Son, Limited (founded in 1875 at Bow, London); the Fuller Accumulative Co., Limited; Fuller's Wire & Cable Co., Limited, and Fuller's Carbon & Electrical Co., Limited.

EFFECT OF REDUCED HOURS ON OUTPUT.

In view of the reduced number of hours now in force in rubber factories, I asked a manufacturer the other day if it was his experience that there was no falling off. His answer was that the general results are much the same, mainly because better time is now being kept by hands who persistently lost time in the past by not turning up regularly before breakfast. With respect, however, to the regular and steady workers the output certainly shows a diminution. The claim that the output will

be the same with a reduction in hours of work has really been negated by the workers in their demand for a 10 per cent advance on piece-work rates. This has been granted locally in several cases by virtue of a special clause in the Whitley Council regulations. The 47-hour week is now uniformly adopted throughout the rubber trade, and it has this good effect, that one manufacturer knows that another cannot gain an advantage over him by working a longer week, as was the case in the past. Although manufacturers now have to spend a good deal of time attending meetings and seeing to a new class of correspondence, the general opinion seems to be that it is worth it if the dislocation of business caused by strikes is done away with.

An important part of Mr. Porritt's recent lecture on rubber at the Royal Society of Arts dealt with the new problems of labor in the factory. Cheap labor, he said, is now a memory of the past and manual operations will have to be performed more efficiently or supplanted by mechanical processes if the new conditions are not to be reflected in unduly increased costs of production. While unnecessary labor will have to be eliminated, that which is essential should be made more efficient.

SOCIETY OF CHEMICAL INDUSTRY.

I referred recently to the somewhat belated report of the Society of Chemical Industry for 1917, and now have a word to say regarding that for 1918, which has appeared more promptly. The chapter on India rubber is written by Dr. Twiss of the Dunlop Rubber Co., Limited, instead of by Dr. H. P. Stevens, who wrote the two preceding ones, a change of authorship having been made in several of the subjects in order to get new points of view. Despite the change from a consulting chemist to a works chemist, with a naturally wider purview of "applied chemistry," there is no extensive lifting of the veil on matters intimately concerned with rubber manufacture, a remark which applies equally to many other subjects treated of in the volume. We have, however, a useful and succinct summary of matters of technical importance of special interest to those who have omitted to read their trade journals carefully throughout the period under review.

With regard to the published list of accelerators for vulcanization, Dr. Twiss points out that its length is apt to be misleading because in some cases the same chemical substance appears several times under different trade names. He makes the important observation that very little definite information is available as to the influence of accelerators on the aging of vulcanized rubber, and still less as to the possible influence of the proportion of free sulphur on the activity of the accelerator. Speaking of reclaimed rubber, he says there is a tendency towards open acknowledgment that the essential effect is purely a thermal one and that the various chemical operations used in conjunction with heat are unnecessary. The main objection to a more general acknowledgment of this lies, I think, in the fact that it knocks the bottom out of a good many patents. The 1918 patent of the Dunlop Rubber Co., Limited, and D. F. Twiss depends on thermal treatment with avoidance of oxidation effects and not on any specific chemical reaction. Perhaps some pronouncement on this important matter will come from America, the home of reclaiming. The paragraph on analysis is somewhat thin, touching as it does on only one topic—the extraction of rubber with acetone. Reference is made to the fact that when the resin contents of a rubber is known and is non-variable the free sulphur in an acetone extract is obtained by simple subtraction instead of a tedious estimation. I imagine that this procedure is by no means a novel one, though, of course, it has

its strict limitations in practice. Attention is drawn in a paragraph on raw rubber to the fact that although most of the moisture which may be retained in rubber is expelled in mastication, the whole of the natural moisture in plantation rubber is not removed and that the 0.2 or 0.3 per cent which is retained is liable to cause porosity unless the surrounding pressure in vulcanization is maintained greater than the vapor pressure of the dissolved water.

HENLEY'S TELEGRAPH WORKS, LIMITED.

The net profit of this old-established business, now in its forty-first year, was £148,054 for 1918, against £162,867 in 1917, and the dividend is 15 per cent against 25 per cent. It should be noted, however, that a year ago the capital was raised from £200,000 to £400,000 by the capitalizing of £200,000 from the reserve fund, the shareholders receiving bonus shares. The motor tire business, which was started a few years ago, was transferred to a new company on August 1 last and this has naturally affected the net balance. In the accounts provision has been made for special depreciation on machinery bought for war purposes, which it is stated will now be useless or of problematical value.

MISCELLANEOUS FOREIGN NOTES.

DEMAND FOR RUBBER FOOTWEAR IN SCOTLAND.

THE "Weekly Bulletin of the Canadian Department of Trade and Commerce" reports an active demand in Scotland for ordinary galoshes and storm galoshes of broad-toed shapes, hip boots and top boots, gray canvas gymnasium shoes, and light sand shoes. There is little call for the strap-sandal or low-cut rubbers, for pointed shapes, or for white or brown goods.

RECLAIMED RUBBER FROM ITALY.

During 1917 there was exported from Turin to the United States reclaimed rubber to the amount of 543,429 pounds, value \$130,154, as against 72,211 pounds in 1916, value \$101,532.

RELATIVE IMPORTANCE OF FRENCH FAIRS.

The leading three French fairs being held this spring have three distinct aims, though each is naturally local and national in character to a certain extent. The Lyons Fair, held March 1-15, 1919, is chiefly international, purposing to substitute the Leipzig Fair; the Paris Fair, held April 25-May 10, 1919, is principally national; and the Bordeaux Fair, to be held May 31-June 15, 1919, is chiefly colonial. This feature of the Bordeaux Fair is natural when it is remembered that approximately one-third of the merchandise bought for and imported into the French colonies, as well as of the products exported from those same colonies, is handled by Bordeaux firms and shipped via Bordeaux.

RUBBER IMPORTED INTO DENMARK.

Figures for the month of December, 1918, and for the year 1918, show that during those respective periods Denmark imported crude and manufactured rubber as follows:

	Kilos.	
	December, 1918.	Year 1918.
Crude rubber	900	5,900
Tires and other rubber goods	23,400	61,400
Totals, imports	24,300	67,300

THE SCANIA FAIR AT MALMO, SWEDEN.

The Scania Fair, to be held at Malmö, Sweden, June 30-July 6, 1919, is primarily a manufacturers' exhibit, its object being to bring together the producer and consumer. The exhibits will be divided into thirteen groups, of which group 8 comprises rubber and leather goods, and group 13, known as the technical department, will cover inventions, patents, mate-

rials, etc., to be used in the manufacture of other goods. This fair is open only to Swedish industry, but many Danish and German interests will be represented through Swedish agents, and some American houses likewise. There is considerable demand in southern Sweden for rubber goods, belting, and other products.

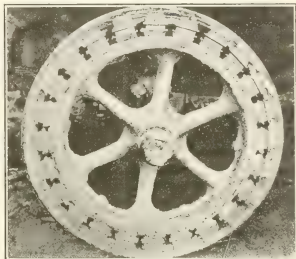
MARKET FOR RUBBER GOODS IN SWEDEN.

The Swedish Consulate at Göteborg calls attention to the demand in Sweden for inner tubes and tractor tires; belting of all kinds; rubber goods; and waterproofed coats. Catalogs in quadruplicate are desired.

A GERMAN PLAN TO SAVE RUBBER.

An interesting device of the Germans to secure something of the resiliency afforded by a rubber tire with the minimum amount of rubber is shown in the accompanying illustration.

This wheel is of a type much used by the Germans during the war to economize in the use of rubber. The rim is of steel and the pads between the rim and the felloe are made of rubber. The picture is from a United States official photograph taken at Speicher, Germany.



RUBBER-PADDED STEEL WHEEL.

TIRE MANUFACTURE AND MARKET IN GERMANY.

A Swiss consular report of conditions in Germany at the present time remarks that the scarcity of cotton in Germany will make it impossible to manufacture pneumatic tires for some time. It is expected that large amounts of crude rubber stored in neutral countries will be released with the signing of the peace treaty. Solid rubber tires will then be manufactured.

The synthetic rubber so much vaunted proved during the war to be useful chiefly for insulating purposes in the construction of submarines, torpedo boats, electrical engines, etc., but it failed to relieve or in any way affect the tire situation. This was due to its lack of resiliency and durability and also to the high cost of production.

It is believed that Germany will offer a good field for American automobiles, trucks, and tires, as the number of prospective buyers is constantly increasing.

It is pointed out that the customary appointment of a foreign importer as agent or sole agent on condition that he buy outright or guarantee to sell a certain number of cars or tires yearly will not result in the establishment of a permanent market. This is due to the fact that the foreign importer is generally unfamiliar with the car or tires, and has no further interest in them or the satisfaction of the buyer, once the goods are sold.

The only means of creating a lasting market is that of establishing an American agency in the prospective foreign territory. Great care should be given to the selection and location of a principal office and sub-agencies, etc.; also, to selecting salesmen of experience in the automobile and tire business, familiar with the country, people, language, methods of procedure, and organization of the German automobile industry.

The Rubber Trade in Japan.

By a Special Correspondent.

THE great impetus given to the Japanese rubber industry by the war is reflected in the rapidly increasing crude rubber imports. As shown by the accompanying official statistics, the 1918 imports represent an increase of 7,966,517 pounds, value \$1,909,006, over the 1917 imports; 9,729,520 pounds, value \$2,761,114, over the 1916 imports and 12,457,352 pounds, value \$4,758,321, over the 1915 imports. The rates of increase for the several years were, in quantity, 95 per cent. in 1918, 132 per cent. in 1917, and 302 per cent. in 1916; in value, 42 per cent. in 1918, 76 per cent. in 1917, and 236 per cent. in 1916.

These imports do not indicate the actual demand of the rubber industry, however. Contrary to the previous custom of buying crude rubber in the various eastern markets as needed, Japanese firms have taken advantage of the low ruling prices and accumulated considerable stocks in anticipation of a rise under improved peace-time conditions. Japan now has her own crude rubber quotations, and at times prices have been more favorable than those ruling at Singapore for the same grades.

Japan's rubber commerce has grown remarkably of late.

IMPORTS OF CRUDE RUBBER.

	1917	1918
	Pounds. Value.	Pounds. Value.
From British India	1,616,131	\$988,285
Straits Settlements	6,185,569	\$3,142,527
Dutch East Indies	44,300	274,716
Great Britain	347,326	266,845
United States	123,301	101,211
Other countries	43,849	21,745
Totals	8,394,385	\$4,565,113

The Japanese rubber manufacturing industry has so expanded in recent years that exports of rubber goods now greatly exceed imports. Insulated wire, tires, toys, and balloons are the lines which have been developed chiefly, so that the imports of rubber manufactures shown by the accompanying statistics consist chiefly of other goods not yet produced in Japan at all, or not in sufficient quantity to meet home demands.

IMPORTS OF RUBBER MANUFACTURES.

	1917	1918
	Pounds. Value.	Pounds. Value.
Reclaimed and unvulcanized rubber	136,165	\$20,673
Special market	19,953	49,457
Sheet rubber—		
Rods and coils	84,610	1,577
Rods, sheets, and tubes	250,012	6,068
Threads, strips, bands, rings and washers	44,786	6,934
Other soft goods	106,285	7,641
Other rubber goods	40,130	27,680
Bale rubber	607,56	673
Insulated wire—		
Armored cables	11,312	1,492
Other armored cables	45,845	29,963
Other wires	213,836	187,839
Woven belts and hoses	14,184	12,957
Waterproof slacking .....	.....	50,643
Elastic webbing	35,910	13,169
Insulating tape .....	.....	610,276
Totals .....	.....	137,657
Scrap rubber .....	.....	8,254

In addition to the above imports of rubber goods for 1917 and 1918, automobiles and parts, including tires, were imported to the value of \$3,830,906 in 1918 against \$1,984,457 in 1917.

In 1912, rubber goods imports reached their highest mark, but with the growth of the Japanese manufacturing industry, and on account of shipping difficulties, these imports have decreased. A customs tariff of 20 to 40 per cent. ad valorem will not tend to increase the volume of these imports under peace conditions.

Excellent automobile and motorcycle tires are now made by the

Japanese in Japan and bicycle tires also. In 1918, automobiles were imported largely in the form of parts and assembled in Japan. They will be in large demand in the near future, having been recognized as a necessity rather than a luxury, as they were formerly regarded in Japan.

There were also exported 2,651 jinrikishas (\$71,133) in 1918, against 6,854 (\$144,752) in 1917; also 7,408 bicycles and parts (exclusive of rubber tires) to the value of \$2,161,334 in 1918, against 5,352 valued at \$1,219,409

in 1917. Jinrikishas for China, Hongkong, Straits Settlements and British India show a gradual decrease figure, as they were exported as parts, not as completed vehicles, in order to avoid payment of import duties and to reduce the cargo charges. The increased use of automobiles is also affecting the sale of jinrikishas.

EXPORTS OF RUBBER GOODS.

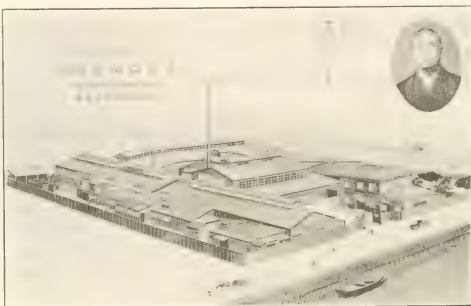
	1917	1918
	Pounds. Value.	Pounds. Value.
Insulated wire	601,344	\$1,559,456
Balloon tires	601,633	2,021,815
Stroller toys and balloons	114,119	.....
Other rubber manufactures	307,115	.....
Totals .....	.....	\$4,002,596

Owing to the shipping difficulties of Japanese rubber goods exports have increased year by year until the Japanese rubber manufacturing industry has become large enough to supply the lack of European and American goods in China, Manchuria, Malaya, British India, Oceania and Australia.

There is a difference of opinion as to the effect of peace on this foreign trade. Some believe that with better shipping conditions, European and American goods will be pushed into these Far East markets to the detriment of Japanese business; others, that the proximity of these markets to Japan and the lower wage scale in Japan place her in an advantageous position to continue and develop this business. The prohibition of imports of Japanese rubber toys by both the United States and Great Britain, which became effective in April of this year, has been a hard blow to Japanese rubber manufacturers, many of whom specialized in balls, dolls and balloons.

NEW ASSOCIATIONS.

Several new trade associations have been formed that are identified with the rubber industry in various ways. Some three hundred makers of toys of rubber, wood, cotton, cloth, paper, celluloid and metal in Tokio have organized the Tokio



MARUOISHI RUBBER WORKS, TOKYO, JAPAN.

Export Toy Makers' Association. In the department of rubber toys, The Mitatsuchi Rubber Manufacturing Co., The Nippon Rubber Co., Limited, and S. Yamada, director of the "Gomusekai" ("Rubber World") were elected to the council. The office is at Sakuragicho, Shitaya, Tokio.

Rubber manufacturers by hot vulcanization methods in Osaka-Fu and Hyogo-Ken (Kobe district) have organized the Osaka-Kobe Rubber Industry Association. The directors are The Kakuichi Rubber Co., The Chugai Rubber Co., Limited, Teikoku (Imperial) Rubber Manufacturing Co., Limited, Settsu Rubber Co., Limited, Naigai Rubber Co., and Hanshin Rubber Works. The office is at 190, Kita-3 chome, Kamifukushima, Osaka.

Rubber goods traders in Osaka have organized the Osaka Rubber Association. The office is at 190, Kita-3 chome, Kamifukushima, Osaka, the same address as that of the Osaka-Kobe Rubber Industry Association.

Rubber traders in Kyushu have organized the Kyushu Rubber Association, at 43, Shimonishimachi, Fukuoka City. Kyushu is an island to the southwest of Nippon and about the area of Belgium.

About three hundred rubber manufacturers, dealers, crude rubber brokers and scrap rubber dealers in Tokio have organized the Tokio Rubber Association with headquarters at Hamacho, Nihonbashi, Tokio.

Manufacturers in Shibuya, Tokio, have organized the Shibuya Rubber Association with an office at 1309 Shimoshibuya, Tokio.

MARKET PRICES.

Owing to the war, the prices of compounding ingredients have risen from 20 to 200 per cent, while the prices of rubber goods generally have also risen 20 per cent. Since the beginning of this year, the price of naphtha has gradually risen to three-fold in April, and manufacturers of waterproof cloths, nipples, balloons, etc., were obliged to raise their prices from 20 to 35 per cent.

EXHIBITIONS.

The Electric Exhibition was held from March 20 to May 10, and insulated electric wires and cables, insulating tapes, ebonite and rubber goods were exhibited by the Mitatsuchi Rubber Manufacturing Co. (Tokio), The Nippon Rubber Co., Limited (Tokio), Fujikura Electric Wire Co., Limited (Tokio), Nippon Electric Wire and Cable Works, Limited (Tokio), Yokohama Electric Wire Works, Limited (Yokohama), Tsuda Electric Wire Works (Kyoto), Sumitomo Electric Wire Works, Limited (Osaka).

In April, the Chemical Industry Exhibition was held in Osaka and rubber goods were exhibited by rubber traders and manufacturers in Osaka and Kobe.

NEW JAPANESE INCORPORATIONS.

Sumatora Rubber Plantation Co., Limited. Capital, \$1,000,000, one-fourth paid in. Plantation, 5,000 acres; office, 23 Satsumahori-Hirashinocho, Osaka.

Takushoku Rubber Co., Ltd. Capital, \$250,000, one-fourth paid in. Office, 18 Kamiya-cho, Shiba, Tokio.

The Fuji Trading Co., Limited, to trade in crude rubber. Office, 3 chome, Sanjitenkhor, Kyobashi, Tokio.

The Taiyo (Sun) Rubber Co. (Ltd.), originally established on a small scale under the style of The Taiyo (Sun) Rubber Works, has increased its capital to \$250,000 and incorporated as a stock company. Office, Oshimamachi, Tokio.

Masuda Co., Limited. Capital, \$1,000,000. Office, 68-9, 4 chome, Honcho, Yokohama. To engage in general trading, especially in crude rubber. Branch offices in Tokio, Osaka, Kobe, Nagoya, etc., in Japan, and in London (England), Melbourne and Sidney (Australia), Shanghai, Dairen, Tientsin, Hankao (China), Calcutta and Singapore.

Nichinan Rubber Co., Limited. To plant in Johore. Capital, \$100,000, two-fifths paid in. Office, 44 Samoncho, Yotsuya, Tokio.

Shino Rubber Co., Limited. Capital, \$750,000. To plant in Johore. Office, 5 Nishikonyacho, Kyobashi, Tokio.

Borneo Rubber Co., Limited. To plant in Borneo. Capital, \$1,000,000, one-fourth paid in. Office, No. 18, 1, 1 chome, Yurakucho, Tokio.

Chugai Rubber Co., Limited. Capital, \$75,000. To manufacture rubber goods. Purchased The Alenken Rubber Works, situated at Toyosakimachi, Osaka.

Takasago Industry Co., Limited, was established with a capital of \$125,000, one-fourth paid in, purchasing The Taiheiy Rubber Co., Limited, Tokio, to manufacture rubber goods and electric batteries.

Keihoku Rubber Works. Capital \$10,000. Purchased The Eastern Rubber Co., Tabata, Tokio. To make rubber toys, etc. Johore Rubber Co., Limited. Capital, \$125,000. Purchased T. Okabe's plantation in Johore. Office, 4 Maruyacho, Kyobashi, Tokio.

Fuji Rubber Manufacturing Co., Limited. Capital, \$1,000,000, one-fourth paid in. Office, Oi-machi, Tokio, to manufacture patent rubber spoppers and tires in which rubber sponge stock replaces the inner tube.

Sakura Rubber Co., Limited. Capital, \$250,000. Office, No. 10 Gofukuchu, Tokio. To manufacture rubber goods.

Takasago Rubber Co., Limited. Capital increased to \$90,000. Products, rubber balls, tubing, etc. Office and works, Zoshigaya, Tokio.

Nankoku Rubber Co., Limited. Capital, \$50,000, one-fourth paid in. Baron H. Shimazu is president.

Nan-a Co., Limited. Capital, \$500,000. Amalgamated with the Malay Rubber Plantation Co., Limited. Capital, \$250,000, both being Japanese rubber plantation companies in Malaya.

Victor Rubber Co., Limited. Capital, \$30,000, one-fourth paid in. To make air pillows, ice bags, etc. Office, 187 Tsunohazu, Yodobashi, Tokio.

Tokio Belt Co., Limited. Capital, \$150,000, one-fourth paid in. Office, 101 Taniyama, Asaki, Tokio. To manufacture rubber belting and other rubber goods.

Hanto Rubber Co., Limited. To plant rubber in the Malay Peninsula. In August it was dissolved because of the law prohibiting the sale to foreigners of land in Malaya. The remaining business is to be settled by the liquidator of the company in Kobe.

Nitto Rubber Co., Limited. Capital, \$250,000, one-fourth paid in. Office, Makino, Nagoya, to make rubber tires.

Yachiyo Rubber Co., Limited. Capital, \$125,000. Purchased Hanokhu Rubber Co., Osaka, to manufacture rubber goods. Office, 1, Yurakucho, Kyobashi, Tokio.

HEVEA RUBBER IN FORMOSA.

Experience indicates that *Hevea* trees are more successfully grown in Formosa than *Manihot* trees. On the Murai plantation *Manihot* was first tried, and camphor trees were planted in alternation to provide a shield from the wind. Hurricanes are of annual occurrence, and despite the interplanting, the *Manihot* trees were greatly damaged. *Hevea* was then tried with better success, but they require seven years to attain the tapping age as against five years in Malaya.

FREIGHT ON RUBBER FROM JAVA TO AMERICAN PORTS.

A considerable decrease in freight rates from Batavia to San Francisco has recently taken place, said to be due to Japanese competition. A comparison of the figures shows the amount is almost 25 per cent.

	Rates.			
	San Francisco		New York	
	Unit	Jan. 1, 1918	Unit	Jan. 1, 1919
Rubber	4 cubic feet	\$62.71	4 cubic meters	\$55.88

1 cubic meter is 35.3 cubic feet

Balata and Rubber Enterprises in the Guianas.

Special Correspondence.

A NEW BALATA ENTERPRISE.

SOME changes for the better have taken place in the balata industry in Surinam during the year. Several valuable concessions have exchanged hands and are now held by the Consolidated Rubber and Balata Estates, Limited, a British Guiana concern. The Consolidated is to operate this new enter-

prise on a gigantic scale; every available part of the acquired lands that has the "goods" will be exploited, the object being to take out the balata as soon as possible. In other words, the company intends to rush matters.

This will mean thousands of dollars to the local trade; the laborers must be fed, and provisions purchased in the local market. When the men return to town and receive their wages it is all spent in the street, and the stores will derive all the benefit from this new source of revenue. It is said the purchase price paid to the sellers was \$30,000 cash, and this amount is considered, by people who know, as being very reasonable. The concessions are situated in the Nickerie district of the colony and are well known to be rich in wood and easily reached from New Town, the starting point.

When the party reaches the spot where operations for prospecting are to take place, the men are sent out in every direction; lines or paths are cut through the forests by means of the cutlass and every tree encountered is marked and noted down so that the foreman at the end of the prospecting term can tell more or less the number of trees to each hectare of land. With this knowledge at its disposal the company, before exploiting or bleeding operations begin, will know exactly what the production will be at the end of a season, conditions, of course, being normal. In this way, therefore, it can be plainly seen that one can tell more or less what to expect from a concession of 40,000 hectares with, say, 20 trees to the hectare.

BALATA INVESTMENTS ARE SOUND.

Dutch Guiana balata investments are sound ones and many have reaped fortunes from this source. In the Nickerie district, for example, there are two full-blooded negroes who, ten years ago, were ordinary bleeders. To-day they are well-to-do men, being worth, individually, about \$200,000 cash, owning landed property valued at \$150,000. These two men are the exception, for the general run of the balata men are "wasters" and drunkards, with never a cent to show after being a week in town.

According to the new balata laws, which came into force not very long ago, only men with some capital will be granted lands by the Government, for the reason that the responsibility is great. For instance, in the case of a company operating a concession with, say, 500 laborers, the Government must be satisfied that after the contract time of these men has expired, their wages will be paid in full the day after their arrival in the city from the concession. In the past, several poor men were made victims by dishonest and unprincipled employers; all this, however, is past and the new laws protect both employer and employee.

THE INDUSTRY IN FRENCH GUIANA.

In French Guiana the industry is prospering. A syndicate at the head of which is M. Galmot, well known in United States society and a popular Paris journalist, is doing wonders on the Maroni. This concern has employed an able balata foreman, John Moses, for years in the employ of the Balata Company Surinam, where he made good. Mr. Moses is placed in charge of the syndicate's affairs and has men and means at his disposal to run the enterprise according to his own judgment. Several hundred bleeders are scattered all over the different concessions on the Maroni and its tributaries and have, up to the date of writing, made ample use of their time by producing a tremendous quantity of gum which, when prepared for market, will amount to several hundred thousand kilograms. French Guiana will, in a comparatively short time, become a rival to both



EXPANSE OF STILL WATER, UPPER MARONI.

prise on a gigantic scale; every available part of the acquired lands that has the "goods" will be exploited, the object being to take out the balata as soon as possible. In other words, the company intends to rush matters.

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PRODUCTION IN 1918.

On the whole, 1918 was a prosperous year for the industry, and all the concerns operating made more or less satisfactory returns on the capital invested. The Balata Company Surinam, for instance, cleaned up a big crop which realized high prices. The firm of A. F. C. Curiel, operating with United States capital, did well; in fact, they all made money, while the smaller undertakings have also no cause to grumble.

The total production for 1918 was 663,930 kilograms of which were exported as follows: To United States, kilos, 26,891; Great Britain, 24,385; sold to the Consolidated in British Guiana, 573,746; total exported, 625,022.

Balata undertakings in Dutch Guiana have always proved veritable gold mines to those companies operating with experienced bleeders and with good administrative head men who study the conditions before starting in. A short sketch of what is most required to make the venture a success will, therefore, be interesting.

HOW CONCESSIONS ARE SUCCESSFULLY OPERATED.

The land which is granted by the Government must be paid for in advance. Charts are necessary to indicate the position

British and Dutch Guiana. The forests are practically virgin and the fields of operation extensive.

THRIVING HEVEA PLANTATIONS.

Cultivated *Hevea brasiliensis* in Dutch Guiana compares favorably with rubber estates in the East, says a Dutch official who arrived recently from Java and was impressed with the robust and healthy condition of the trees in this country. Hardly any tapping operations have taken place during the last three years owing to the war and the restrictions on the export of rubber. In June last year, however, one estate, as an experiment, put on a gang of Javanese bleeders for a few months, and the results were so satisfactory that the owners have now decided to tap the trees regularly in future. This experimental tapping produced 1,718 kilograms of biscuit of the finest quality.

It is expected that all the rubber-producing plantations will begin operations this year, and if weather conditions are satisfactory the production will startle the rubber producers of the East. It must not be forgotten that only yesterday the colony began to talk rubber and is therefore young in the business in comparison with other countries. The colony is to be congratulated on its soil and climate; they are ideal for the industry and if the price of rubber remains stable there will still be good money to be made by rubber planters in this part of the world.

There are fully a million trees of tappable size in Surinam that have never been touched by the knife; they are just "fat" with latex, and are fine specimens of *Hevea brasiliensis*. It is a pleasure to visit some of the estates and see these valuable productions of nature. A fact which should be recorded is that for the last eighteen months the leaf disease has not been seen in the country; it is entirely eradicated and it is anticipated that, through measures adopted by the Agricultural Department, the disease will never make its appearance again.

In conclusion, Dutch Guiana would make an ideal spot for Americans, it is so well situated; the climate is charming, the resources so numerous, the chances for money-making so certain, that it would be a pity to allow such a country to go to ruin when the United States has the millions to make it one



TRAIL THROUGH THE BUSH TO BALATA CONCESSION.

of the most prosperous countries in South America. Why doesn't Uncle Sam make a bid for it? Holland undoubtedly realizes the desirability of a transfer to the United States of her West Indian possessions at this time, especially when she contemplates the expense she is called upon to meet each year for their up-keep. To quote the words of Dr. Schick in "Onz Land":

"America can better develop the resources of the West Indies than the Netherlands, and when people begin to talk of how many millions they will ask, they are on their way to acceptance of the proposition."

MISCELLANEOUS FOREIGN NOTES.

BALATA AND RUBBER EXPORTS FROM BRITISH GUIANA.

THE amount of balata and rubber exported from British Guiana to England and the United States during the ten months ended October 31, 1918, as compared with the corresponding ten months of 1917, is as follows:

	1917.	1918.
Balata pounds	1,915,174	575,081
Rubber	12,113	19,173

The production of balata decreased because the dry season set in earlier than usual, stopping the flow of latex. At the same time, the stocks on hand at the end of October were not above normal for that season of the year.

RUBBER IN DUTCH GUIANA.

Rubber production in Dutch Guiana decreased about 50 per cent in 1917, owing to plant diseases and lack of the right kind of labor, but ruling prices were high. In 1916, 23,861 pounds were sold for \$23,861; in 1917, 9,354 pounds produced \$5,102.

Balata production increased 261,201 pounds in 1917, 1,952,643 pounds being produced as against 1,692,442 in 1916. Prices varied during the year, changing on the London market from 70 to 95 cents per kilo and in New York from 72 to 95 cents.

RUBBER MANUFACTURES IN PERU.

Imports of rubber manufactures increased notably during 1917, notwithstanding the difficulties of shipment. The amount imported in 1917 was valued at \$1,002,288. In 1916 the imports amounted to \$107,817.

Export figures, however, show a decrease of approximately 25 per cent, doubtlessly due to inadequate shipping facilities. Crude rubber exports during 1917 were valued at \$2,812,640, as against \$3,391,459 in 1917.

BRITISH SOUTH AFRICAN IMPORTS AND EXPORTS, 1916-1917.

Statistics covering the imports and exports of British South Africa show the following comparison:

IMPORTS.		
	1916.	1917.
India rubber, including tires.....	\$2,531,286	\$2,805,099
Machinery, tools and fittings.....	864,155	885,096
Conveying hose	401,311	288,122
Totals	\$3,796,752	\$3,981,917
EXPORTS.		
Rubber goods and gutta percha:		
To United Kingdom		\$1,365,553
United States		738,944
Italy		231,683
Total		\$2,336,180

Since the entry of the United States into the war, no discrimination has been made against American goods, although there is naturally some preference for products of British manufacture in some quarters. Most important importers, however, handle American products. Rubber tires are also imported from Japan.

RUBBER EXPORTERS IN BATAVIA.

The Bureau of Foreign and Domestic Commerce can supply a list of exporters of rubber at Batavia if reference is made to file number 9546.

RUBBER IMPORTED INTO AUSTRALIA AND SOUTH AUSTRALIA.

Import figures for Australia and South Australia show that Australia imported rubber goods during the year 1917-1918 amounting to \$5,370,085, a slight gain over the figures for 1916-1917, \$5,274,921. During the year 1916-1917, South Australia imported rubber and rubber goods to the value of \$286,413.

- 190,032. Pneumatic tire. The Canadian Consolidated Rubber Co., Limited, Montreal, Que., assignee of G. F. Fisher, Roselle, N. J., U. S. A.
- 190,066. Armored pneumatic tire. C. W. Bain and R. L. Brown, assignee of 1/2 interest—both of High Point, N. C., U. S. A.

ISSUED MAY 6, 1919.

- 190,094. Pneumatic pad for arch supports. T. Coffey, Tulsa, Okla., U. S. A.
- 190,115. Toy ball having a whistle and rattle, the representation of a lace on its surface. The Crown Perfection Tube Co., each having a portion at its center vulcanized. C. O. Griffin, Newbern, N. C., U. S. A.
- 190,127. Tire valve. W. C. Hutton, Providence, R. I., U. S. A.
- 190,134. Pneumatic insole for shoes. M. Korbel, South Bethlehem, Pa., U. S. A.
- 190,161. Syringe. T. P. Richards, Toronto, Ont.
- 190,191. Inner tube for tires. The Crown Perfection Tube Co., New York City, assignee of J. J. Voorhees, Jersey City, N. J.—both in U. S. A.
- 190,192. Battery jar of vulcanized rubber. The Canadian Consolidated Rubber Co., Limited, Montreal, Que., assignee of H. Weida, Highland Park, N. J., U. S. A.
- 190,205. Dust cap for valves. A. Schrader's Son, Inc., New York City, assignee of W. B. Burke, Cleveland, O.—both in U. S. A.
- 190,215. Spring wheel with solid rubber tire. E. E. McNeely and H. Goulet, assignee of 1/2 interest—both of Waldron, Ind. U. S. A.
- 190,222. Artificial foot with rubber cushioning pads. C. B. Winn, Buffalo, N. Y., U. S. A.

ISSUED MAY 13, 1919.

- 190,231. Tire valve. M. C. Schweinert, West Hoboken, and H. P. Kraft, Ridgewood, both in New Jersey, U. S. A.
- 190,238. Tire filler composed of small particles of rubber, cement, gasoline, and kerosene, molded and subjected to pressure. E. F. Aycock, Midlothian, Tex., U. S. A.
- 190,288. Tire rim. S. P. Michael, Frankfurt, Ind., U. S. A.
- 190,333. Pneumatic tire. O. Zancan, New York City, U. S. A.

THE UNITED KINGDOM.

ISSUED APRIL 2, 1919.

- 122,694. Collapsible crutch with rubber ferrule. R. T. Kelly, The Nook, Walton Park, Liverpool.
- 122,777. Drinking cup for vacuum flasks, with rubber band. F. Price, Moate Road, Athlone, Ireland.
- 122,806. Mattress with inflatable sections. F. W. Brampton, Steel Stampings, Limited, Cookley, near Kidderminster, Worcester-shire.
- 122,904. Solid rubber tire with side recesses. Dunlop Rubber Co., 14 Regent street, Westminster, and C. Macbeth, Dunlop Rubber Co., Para Mills, Aston, Birmingham.

ISSUED APRIL 9, 1919.

- 123,011. Knife for tapping rubber trees. T. W. Newey, 9 St. Marx's Row, Birmingham.
- 123,142. Resilient wheel. A. W. Benjamin, Yarker, Ont., Canada.
- 123,143. Multi-core electric cable. A. V. Downton, Lesney View, Erith, Kent.

ISSUED APRIL 16, 1919.

- 123,166. Sock having layer of paper, powdered cork, sawdust, etc., covered with layers of waterproofed fabric whose rubberized surface is inside or outside, according to whether the socks are to be worn by persons with cold or hot feet. S. Abram, 16 Marshall Place, Cheetham Hill, Manchester.
- 123,174. Pneumatic or inflated disk-wheels with or without streamline shield, for deadening shock of airplane landing. Dunlop Rubber Co. and W. H. Paul, Para Mills, Aston Cross, Birmingham.
- 123,221. Protector for soothing teats or nipples for nursing bottles. E. C. B. Marks, 57 Lincoln's Inn Fields, London.
- 123,236. Elastic tabs for suspenders. C. G. Hall, 13 Fosters Gardens, Halesmere, Surrey.
- 123,284. Rubber blocks for wheel tires. E. W. Edwards, Akron, O., U. S. A.
- 123,291. Detachable rim or double rim for tires. T. J. Hobson, 17 Chain Walk, Kent, England.
- 123,358. Rubber pads with removable metal studs, for adapting tractor wheels for use on hard roads or soft land. W. L. Bodman, Lydiate Ash, Bromley, Kent, England.
- 123,382. Life-saving garment with inflatable pouch. J. S. Drew, 497 Australian Camp, Stockbridge, Hampshire.

ISSUED APRIL 24, 1919.

- 1,34,87. Protector for boots and shoes, consisting of a revoluble rubber pad secured with canvas straps and a cushioned plate for the securing screw. N. N. Chamberlain, Chowpatti, Bombay, India.

ISSUED APRIL 30, 1919.

- 123,608. Rubber-coated vulcanized fiber sheets for use instead of metal plates for ricing, padding, or for the construction of vessels or utensils ordinarily made of tin. A. D. Spicer and J. Spicer & Sons, 50 Upper Thames street, London.
- 123,745. Breast pump. O. O. O. Schwidetzky, 157 Terrace avenue, Hasbrouck Heights, N. J., U. S. A. (Not yet accepted.)
- 123,789. Foundation band for solid rubber tire, having inner edge formed with grooves to reduce the weight. Dunlop Rubber Co., 14 Regent street, Westminster, and H. C. Young, The Grove, Chester Road, Erdington, Birmingham.

TRADE MARKS.

THE UNITED STATES.

- N^O. 106,518. The word BELMONT—machine composition packing. The Belham Packing & Rubber Co., Limited, London, England.
- 109,308. The words TET-FOST above the representation of a nipple within a circle—rubberized nipples. Harris & Benzts Co., Philadelphia, Pa.

- 111,651. The words KELLY SPRINGFIELD in fancy lettering to fill the space within the inner of two circles—rubber and fabric pneumatic tires. Kelly-Springfield Tire Co., New York City.
- 114,656. The word SUPERBOL—composition soles for boots and shoes. The Armstrong Cork Co., Pittsburgh, Pa.
- 115,043. The words BLANTON'S BEAR-CAT over the representation of a bear-cat crawling through a tire, all within a modified square—patches for pneumatic tires. John R. Blanton, Oklahoma, Okla.
- 115,157. Representation of three tires eccentrically interlinked, bearing the words TUB PARA COMPANY, TIRES, TRENTON, N. J.—rubber tubes and tubes. The Para Co., Trenton, N. J.
- 115,360. The words AIR WEIGHT—dress shields. Samstag & Hilder Bros., New York City.
- 115,477. The word RUBLAZ—rubber belting. Boston Woven Hose & Rubber Co., Cambridge, Mass.
- 115,554. The word HORSESHOE—rubber heels or lifts for footwear. Racine Auto Tire Co., Racine, Wis.
- 115,739. The words 1/2-17-Titch—patches, including cement and rubber patches for repairing tires and tubes. Schaefer Brothers, St. Louis, Mo.
- 115,830. Representation of a tire within which a bear-cat is crouching, and the words BEAR CAT—rubber backed patch for punctures and blow-outs in pneumatic tires and for patching other rubber articles. Blanton Rubber and Manufacturing Co., Oklahoma, Okla.

THE DOMINION OF CANADA.

- 24,351. The word TROFAN enclosed in horizontal and vertical lines—automobile tubes. Samuel A. Richardson, Montreal, Que.
- 24,363. The word CLIPPER—pneumatic tires and tubes for automobiles and bicycles. Dunlop Tire and Rubber Goods Co., Limited, Toronto, Ont.

NEW ZEALAND.

- 14,810. Representation of a ball—waterproof clothing. Mishawaka Woollen Manufacturing Co., Mishawaka, Ind., U. S. A.
- 14,812. The words BOLT-BAND arranged in a half-circle—waterproof clothing. Mishawaka Woollen Manufacturing Co., Mishawaka, Ind., U. S. A.

DESIGNS.

THE UNITED STATES.

- N^O. 53,106. Tire. Patented March 18, 1919. Term 7 years. A. E. Brown, Tacoma, Wash.
- 53,108. Tire. Patented March 25, 1919. Term 14 years. H. C. Arnold, Brookline, assignor to Converse Rubber Shoe Co., Malden—both in Mass.
- 53,111. Pneumatic tire. Patented March 25, 1919. Term 14 years. W. R. Blowers, Omaha, Neb.
- 53,112. Pneumatic tire. Patented March 25, 1919. Term 14 years. W. R. Blowers, Omaha, Neb.
- 53,113. Pneumatic tires. Patented March 25, 1919. Term 14 years. W. R. Blowers, Omaha, Neb.
- 53,114. Pneumatic tire. Patented March 25, 1919. Term 14 years. W. R. Blowers, Omaha, Neb.



- 53,129. Tire. Patented March 25, 1919. Term 14 years. A. R. Colvin, assignor to The Combination Rubber Manufacturing Co.—both of Bloomfield, N. J.
- 53,129. Tire. Patented March 25, 1919. Term 14 years. L. J. Kelly, assignor to The McGraw Tire & Rubber Co.—both of East Palestine, O.
- 53,133. Tire. Patented March 25, 1919. Term 7 years. C. W. McKee, assignor to The Gordon Tire & Rubber Co.—both of Canton, O.
- 53,143. Pneumatic tire. Patented March 25, 1919. Term 14 years. M. W. Wiener, Akron, assignor to The Oldfield Tire Co., Cleveland—both in Ohio.
- 53,146. Tire. Patented April 1, 1919. Term 14 years. F. N. Nonski, assignor to J. & D. Fire Co.—both of Charlotte, N. C.
- 53,151. Tire casing. Patented April 1, 1919. Term 14 years. C. P. L. Huston, Plainfield, N. J.
- 53,150. Tire. Patented April 1, 1919. Term 7 years. R. S. Woods, assignor to Veils' Tire & Rubber Products Co.—both of Seattle, Wash.

THE DOMINION OF CANADA.

- 4,541. Waterproof coat with leggings. Patented March 29, 1919. B. W. Hiley, Halleybury, Ont.
- 4,548. Pneumatic tire. Patented March 31, 1919. Dunlop Tire and Rubber Goods Co., Limited, Toronto, Ont.
- 4,549. Garier. Patented March 31, 1919. William P. Barrett, St. Mary's, Ont.
- 4,553. Pneumatic tire. Patented March 31, 1919. Bernard W. Hartley, Halleybury, Ont.
- 4,570. Tire tread. Patented April 2, 1919. The Canadian Fairbanks-Morse Co., Limited, Montreal, Que.

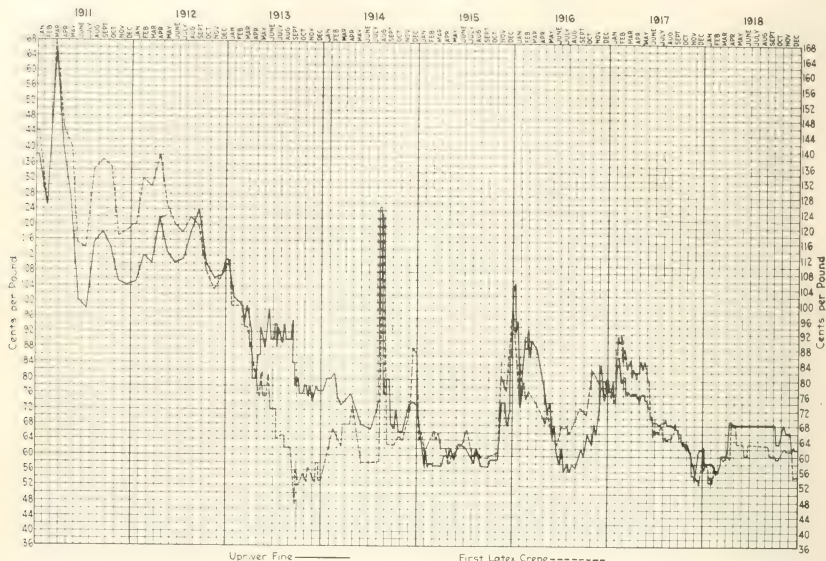


CHART SHOWING FLUCTUATIONS OF THE NEW YORK CRUDE RUBBER SPOT MARKET FOR THE YEARS 1914 TO 1918, INCLUSIVE.

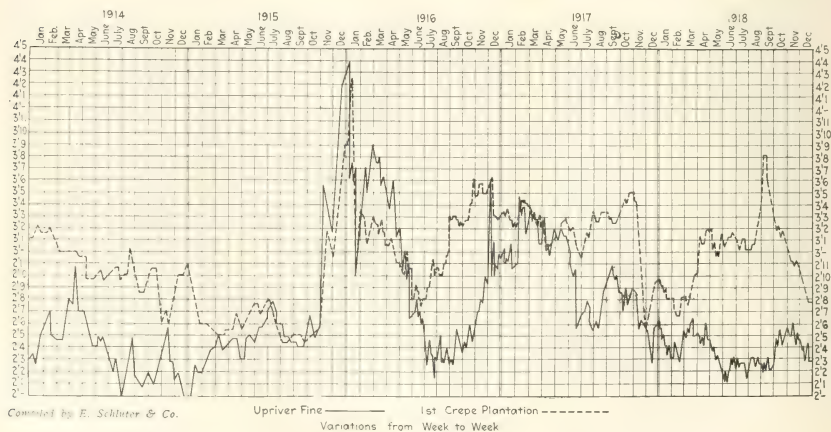


CHART SHOWING FLUCTUATIONS OF THE LONDON CRUDE RUBBER MARKET FOR THE YEARS 1911 TO 1918, INCLUSIVE.

Review of the Crude Rubber Market.

NEW YORK.

DURING the past month the prevailing tone in the crude rubber market has been one of dullness, the price for plantations has been remarkably steady. Early in the month the spot plantations were depressed owing to oversupply. The prices were firm, however, due to advices from London and the Far East where the markets were higher.

About the middle of the month there was a decline of about one cent per pound on first latex, followed by a tendency to advance, owing to a demand for future deliveries.

The month closed dull with quotations nominal.

PLANTATIONS. May 3, first latex crepe, spot 47 cents; May arrivals, 48 cents; July to September arrivals, 48 cents; July to December arrivals, 48 cents; January to December, 1920, 51 cents. On May 23 the prices were: first latex crepe, spot, 46½ cents; July to September arrivals, 47 cents; July to December arrivals, 47½-48 cents. January to December, 1920, 49 cents.

May 3, spot ribs, 46 cents; May arrivals, 46 cents; July to September arrivals, 47 cents; July to December arrivals, 47 cents; January to December, 1920, 50 cents. On May 23, spot ribs were 45½ cents; July-September, 47 cents; July-December, 46½-47 cents, and 1920 futures, 50 cents.

May 3, Amber gristly crepe was quoted at 41 to 44 cents for nearby and 43 cents for July to December arrivals. On May 23 this grade was quoted, spot 41-44 cents; July to December arrivals 44 cents; 1920 futures 44 cents.

May 3, No. 1 roll brown crepe, spot, 34 cents; nearby, 31 cents; July to December arrivals, 30 cents; May 23, No. 1 roll brown crepe, spot, was 32-34 cents; July to December arrivals, 32 cents.

PARAS. Spot prices on May 3 were: Upriver fine, 56½ cents; islands fine, 47 cents; upriver coarse, 35 cents; islands coarse, 21 cents; Cameté coarse, 23 cents; May 23, spot prices were: Upriver fine, 56 cents; upriver coarse, 34 cents; islands fine, 47 cents; islands coarse, 34 cents; Cameté coarse, 22½ cents.

NEW YORK QUOTATIONS.

Following are the New York spot quotations, for one year ago, one month ago and on May 24, the current date:

	June 1, 1918.	May 1, 1919.	May 24, 1919.
PLANTATION HEVEA—			
First latex crepe.....	63 @	48½ @	46 @ 47
Hevea first crepe.....	60 @	46 @	44 @
Amber crepe No. 1.....	60 @	45 @	43 @
Amber crepe No. 2.....	60 @	44 @	42 @
Amber crepe No. 3.....	58 @	41 @	41 @
Amber crepe No. 4.....	57 @	40 @	40 @
Brown crepe, thick clean.....	60 @	43 @	41 @
Brown crepe, thin clean.....	60 @	43 @	41 @
Brown crepe, thin speckly.....	50 @	41 @	41 @
Brown crepe, rolled.....	44 @	34 @	32 @
Standard quality.....			
Smoked sheet, ribbed.....	62 @	47½ @	45 @ 46
Hevea ribbed smoked sheet.....			
Smoked sheets, plain standard quality.....	60 @	46 @	43 @ 44
Hevea plain or smooth smoked sheets.....			
Unsmoked sheet, standard quality.....	61 @	44 @	42 @ 43
Hevea unsmoked sheets.....			
Colombo scrap No. 1.....	46 @	33 @	29 @
Colombo scrap No. 2.....	44 @	30 @	25 @ 30

BRAZILIAN PARAS—

Upriver fine.....	68 @	56½ @	56½ @
Upriver medium.....	63 @	51 @	51 @
Upriver coarse.....	40 @	34 @	34 @
Upriver weak fine.....	40 @	34 @	34 @
Upriver weak medium.....	40 @	34 @	34 @
Upper catcho ball.....	59 @	44 @ 37½ @	47 @ 35
Islands fine.....	27 @	44 @	43 @
Islands medium.....	27 @	43 @	43 @
Islands coarse.....	26 @	43 @	43 @
Lower catcho ball.....	36 @	31 @	31 @
Peruvian fine.....	53 @	51½ @	51½ @
Tapijira fine.....	53 @	53½ @	53½ @

	June 1, 1918.	May 1, 1919.	May 24, 1919.
AFRICANS—			
Niger flake, prime.....	38 @	22 @	23 @
Benuea, extra No. 1, 28%.....	31 @	22 @	32 @
Benuea No. 2, 32½%.....	26 @	22 @	30 @
Congo prime, black upper.....	50 @	42 @	**42 @
Congo prime, red upper.....	48 @	40 @	**40 @
Rio Nunez ball.....	53 @	50 @	**50 @
Rio Nunez sheets and strings.....	50 @	50 @	**50 @
Conakry niger.....	50 @	50 @	**50 @
Massai sheets and strings.....	55 @	50 @	**50 @
CENTRALS—			
Corinto scrap.....	30 @	33 @	32 @
Esmeralda sausage.....	39 @	33 @	32 @
Central scrap.....	39 @	32½ @	31 @
Central scrap and strip, 75%.....	38 @	32 @	29 @
Central wet sheet, 25%.....	35 @	22 @	23 @
Guayule, 75% guarantee.....	48 @	30 @	25 @
Guayule, dry.....	38 @	40 @	40 @
MANICOBAS—			
Ceara negro heads.....	40 @	36 @	36 @
Ceara scrap.....	34 @	26 @	32 @
Manicoba (thick and thin).....	38 @	34 @	34 @
washing and drying.....	38 @	34 @	34 @
Mangabeia thin sheet.....	40 @	36 @	38 @
EAST INDIAN—			
Assam rubber.....	**56 @	50 @	50 @
Assam rubber.....	**54 @	50 @	50 @
Pennine Block scrap.....	**47 @	34 @	35 @
BALATA—			
Black, Ciudad Bolivar.....	69 @	76½ @	80 @ 85
Colombia.....	60 @	46 @	40 @ 62
Paraguay.....	59 @	46 @	40 @ 62
Sorinim sheet.....	**93 @	67 @ 69	1 40 @
amber.....	94 @		1 03 @
PONTIANAK—			
Banjermin.....	**14½ @ 15	14 @ 17	14 @ 15
Pressed block.....	**13 @	23½ @ 25	16 @ 17
Sorinim.....		14½ @	12 @ 14
GUTTA PERCHA—			
Gutta Sialk.....	**24 @	26 @	34 @
Red Macassar.....	**2,00 @ 3.00	3.20 @	3.15 @

*Rubber Association of America nomenclature.
**Nominal.

RECLAIMED RUBBER.

The market for reclaimed rubbers of every grade has remained dull for the past two months. Consumers continue to purchase only for immediate needs and special requirements.

Present prices at which scrap rubber is held by dealers practically forbid its conversion by reclaimers into products that can compete with crude rubber. Thus a situation is created disadvantageous to the trade on all sides which ultimately probably will be relieved by mutual concessions.

NEW YORK QUOTATIONS.

May 24, 1919.

	Subject to change without notice.
Standard reclaims:	
Floating.....	.35 @ .40
Friction.....	.35 @ .40
Mechanical.....	.12 @ .13
Red.....	.20 @ .25
Shoe.....	.14½ @ .15½
Tire, auto.....	.17½ @ .18½
Truck.....	.12½ @ .13½
White.....	.24 @ .25

COMPARATIVE HIGH AND LOW SPOT RUBBER PRICES.

	May 1919.	May 1918.	May 1917.
PLANTATIONS—			
First latex crepe.....	\$0.48 @ \$0.46	\$0.67½ @ \$0.65	\$0.75 @ \$0.75
Smoked sheet ribbed.....	.47 @ .45	.67½ @ .62	.75 @ .75
PARAS—			
Upriver fine.....	.58 @ .56	.68 @ .68	.74 @ .73
Upriver coarse.....	.48 @ .44	.42 @ .38	.53½ @ .51
Islands fine.....	.47½ @ .45	.50 @ .53½	.73½ @ .73½
Islands coarse.....	.41½ @ .41	.38 @ .38	.34 @ .33½
Cameta.....	.21 @ .21½	.28 @ .28	.27 @ .26½

*Figured only to May 21.

THE MARKET FOR COMMERCIAL PAPER.

During the first half of May the demand for paper was light, but improved the latter part of the month, especially with out-of-town banks, the best paper names going at 5½ per cent to 5¾ per cent, and others not so well known at 6 per cent.

EXPORTS OF INDIA RUBBER FROM MANAOS DURING THE MONTH OF MARCH, 1919.

EXPORTERS.	NEW YORK.				EUROPE.				GRAND TOTALS.
	Time.	Medium.	Coarse.	Cauch.	Time.	Medium.	Coarse.	Cauch.	
Tancredi, Porto & Co., Ltd.	91,336	21,490	69,321	110,243	292,000	52,000	.....	.....	344,000
Stowell & Co., Ltd.	31,280	3,308	30,936	28,537	104,061	100,067	11,290	5,074	243,061
J. A. Mearns & Co., Ltd.	.....	8,840	29,190	2,080	40,110	205,870	.....	.....	205,870
J. G. Armas, Ltd.	.....	.....	40,000	.....	130,813	6,962	3,664	.....	141,318
General Rubber Co. of Brazil, Ltd.	.....	5,440	.....	5,440	118,796	1,174	338	28,861	120,000
Alfred H. Alden, Limited.	42,069	6,241	1,660	50,000	50,116	.....	.....	.....	50,116
J. Hasaliba, Ltd.	.....	.....	.....	.....	30,800	1,218	552	.....	31,570
Hugon & Fiala, Ltd.	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	164,725	44,919	171,107	130,860	531,611	604,583	20,644	9,638	1,139,785
.....	16,306	31,304	15,647	17,870	81,127	18,082	3,518	4,142	152,045
Totals	181,031	76,223	186,754	168,730	612,738	622,665	24,162	13,780	1,451,930

Compiled by Stowell & Co., Manaus, Brazil.

RUBBER IMPORTS AND EXPORTS FOR CEYLON.

IMPORTS.				EXPORTS.				PORTS FROM JAVA.			
January 1 to March 24.				January 1 to March 24.				January.			
Crude rubber:	1918	1919.		United Kingdom, pounds	1918	1919	To England	1918.	1919.		
From Straits Settlements, lbs.	1,061,878	474,809		France	3,927,482	5,779,476	United States	1,071,000	1,423,000		
India	538,021	399,936		Victoria		260,260	Canada		20,000		
Burma and other countries				New South Wales	89,735		Singapore	201,000	539,000		
				United States	118,796	62,742	Australia		27,000		
				Canada and Newfoundland	5,355,318	21,863,779	Other countries		8,000		
				India		412,340		19,000	9,000		
Totals	1,603,006	874,745		Straits Settlements		659	Totals	1,364,000	2,672,000		
				Japan		1,612	From Batavia	774,000	1,332,000		
						424	Samara	23,000	74,000		
						105,320	Sorabaya	540,000	1,211,000		
							Other ports		106,000		
											</

These figures include cargoes for transshipment to New Zealand, other ports of Australia, and dependencies as reported by the Ceylon Chamber of Commerce.

PLANTATION RUBBER EXPORTS FROM JAVA.

EXPORTS.			
January 1919.			
To England, tons	United States, tons	Canada, tons	Singapore, tons
.....	1,071,000	20,000	21,000
.....	201,000	27,000	23,000
.....	19,000	8,000	9,000
Totals	1,364,000	2,672,000	72,000
From Batavia, tons	774,000	1,332,000	50,000
Samarang, tons	50,000	23,000	.....
Sorabaya, tons	540,000	1,211,000	.....
Other ports, tons	106,000	.....	.....
Totals	1,364,000	2,672,000	.....

WEEKLY RUBBER REPORT.

GUTHRIE & CO., LIMITED, Singapore, report (April 10, 1919): Influenced by early shipping opportunities for America, the weekly rubber auction opened yesterday with a strong demand for all grades, which was continued throughout the sale. Prices, although showing considerable advances on the week, are generally below the level of business reported prior to the opening of the auction. The demand for fine pale crepe was a feature of the market, and this grade sold up to 79 cents, an advance of 2 cents on the previous week. Fine ribbed smoked sheet opened at 77½ cents and firmed up to 78½ cents (one small lot sold for 79 cents) on the second day, showing an advance of 1 cent. Off quality crepe and sheet found ready buyers at a few cents under the former prices. The steady round about previous values, while dark and barky grades recorded a further advance.

The quantity on offer was unusually small, the total catalog being only 971 tons, of which 611 tons changed hands.

The following is the course of values:

	In Singapore per pound.	Sterling Equivalent per pound in London.
Sheet, fine ribbed smoked	76c	28 1/2
Sheet, good ribbed smoked	75c	28 1/4
Sheet, plain, unsmoked	60c	21 1/2
Crepe, fine pale	77c	28 1/2
Crepe, fine brown	71c	26 1/2
Crepe, good brown	64c	23 1/2
Crepe, dark	44c	16 1/2
Crepe, bark	35c	12 1/2
Scrap, virgin and pressed	21c	7 1/2
Crepe, bark	35c	12 1/2

(Quoted in S. S. Currency.)

RUBBER EXPORTS FROM THE FEDERATED MALAY STATES.

A report from Kuala Lumpur states that the export of rubber from the Federated Malay States in the month of March amounted to 10,679 tons, which compares with 10,809 tons in February and 7,709 tons in the corresponding month last year. The total exports for the first three months of the present year are 26,651 tons as against 22,117 tons last year and 20,333 tons in 1917.

Appended are the comparative statistics for three years:

	1917.	1918.	1919.
January	.....	7,588	7,163
February	7,250	6,820	10,809
March	7,088	7,709	10,679
Totals	20,333	22,117	28,651

STRAITS SETTLEMENTS RUBBER EXPORTS.

A report from Singapore states that the export of cultivated rubber from Straits Settlements in the month of March amounted to 20,908 tons, the highest on record for one month—compared with 15,661 tons in February and 8,858 tons in the corresponding month last year. The total export for the first three months of the year is 50,973 tons, as against 15,494 tons last year and 18,356 tons in 1917. Appended are the comparative statistics for three years:

	1917.	1918.	1919.
January	15,761	4,302	14,404
February	6,454	2,334	15,661
March	8,299	8,858	20,908
Totals	18,356	15,494	50,973

EXPORTS OF PLANTATION RUBBER FROM THE FAR EAST.

February, 1919.

	Singapore.	Penang.	Port Swettenham.	Totals.
To United Kingdom, pounds	7,931,333	2,816,651	2,217,351	12,965,315
Europe	314,133	.....	.....	314,133
Japan	1,584,267	112,000	.....	1,696,267
United States	14,033,200	1,154,828	.....	15,188,028
New York	10,583,732	888,480	545,585	12,017,797
Colombo	169,734	75,865	46,951	122,816
Australian Ports	83,367	.....	.....	83,367
Totals	34,699,866	5,048,004	2,809,687	42,557,557

(Compiled by R. E. Howarth, Penang, Straits Settlements.)

CRUDE RUBBER ARRIVALS AT ATLANTIC AND PACIFIC PORTS AS STATED BY SHIPS' MANIFESTS.

PARAS AT NEW YORK.

	Me. Fine.	Coarse.	Ch. Mixed.	Totals.
APRIL 24. By the S. S. <i>Sergipe</i> , from Rio de Janeiro.	44	302	44	233
H. A. Aslett & Co., Ltd.	.....	.....	.....	190,230
Frühling & Jochen.	385	113	341	318,980
Poel & Beldy	.....	.....	.....	92,040
Neuss, Hoeslen & Co.	277	144	693	1,314,000
Pail Bernick	606	.....	.....	15,100
Lazard Freres	606	.....	.....	108,300
Mayer & Brown	562	198	41	488,570

1 Packages.

2 Pelles, 63,500 pounds, including medium.

3 Caneels, 44,800 pounds.

APRIL 28. By the S. S. <i>Panama</i> , from Cristobal.	.....	.....	.....	43,250
G. Amisack & Co., Inc.	95	.....	.....	2,640
May 3. By the S. S. <i>Matura</i> , from Trinidad.	.....	.....	11	.....
Gillespie Bros.	.....	.....	.....	1,920
May 8. By the S. S. <i>Colon</i> , from Cristobal.	.....	.....	8	.....
G. Amisack & Co., Inc.	.....	.....	.....	.....

May 12. By the S. S. <i>Alfonso</i> , from Macao.	.....	.....	.....	163,928
General Rubber Co.	288	27	101	278,300
Meyer & Brown	76	143	168	630 pgs.

H. A. Aslett & Co.	79	14	4	84,732
Pail & Beldy	52	30	136	327,390
I. Champe & Co.	117	31	105	170,838
Pires, Teixeira & Co.	110	8	59	433
Lazard Freres	.....	.....	.....	142,890
W. R. Greig & Co.	.....	59	208	100,410
G. Pradelin & Co.	48	6	104	14,300
Blair, Brown & Co.	1,284	.....	163 pgs.	148,643
Suarez Filho	.....	.....	.....	214,431
Various	34	10	393	169,175

1 Pelles, 59,664 pounds.

PLANTATIONS.

Shipment from	Shipped to	Pounds	Totals	Shipment from	Shipped to	Pounds	Totals
APRIL 19. By the S. S. <i>Bombay Maru</i> , at New York.				Alcides' Successors, Limited	Panama, at San Francisco.		
J. T. Johnstone & Co., Inc.	Colombo	New York	330,500	F. R. Henderson & Co., Inc.	Penang	San Fran.	312,660
Thomas J. Lipton	Colombo	New York	90,000	United States Rubber Co.	Penang	San Fran.	4,130
C. Trevanion & Co., Inc.	Colombo	New York	86,200	The Goodyear Tire & Rubber Co.	Singapore	New York	439,100
Rubber Importers & Dealers' Co., Inc.	Colombo	New York	15,000	F. R. Henderson & Co., Inc.	Colombo	Akron	288,540
J. Avon & Co.	Colombo	New York	12,940	Various	Colombia	New York	5,400
William H. Stiles & Co.	Colombo	New York	23,400		Penang	San Fran.	98,280
F. R. Henderson & Co., Inc.	Colombo	New York	20,160	APRIL 20. By the S. S. <i>Empress</i> , at New York.			
Rosers-Pyatt Shellac Co.	Colombo	New York	28,800	Pool & Kelly	Liverpool	New York	24,840
Charles & Wilson	Colombo	New York	193,500	T. T. Downing	Liverpool	New York	18,000
Robinson & Co., Inc.	Colombo	New York	30,600	The B. F. Goodrich Co.	Liverpool	New York	18,180
William H. Stiles & Co.	Colombo	New York	23,400	Charles T. Wilson Co., Inc.	Liverpool	New York	66,960
Hood Rubber Co.	Colombo	New York	39,880	Various	Liverpool	New York	315,360
L. Littlejohn & Co., Inc.	Colombo	New York	459,540	APRIL 20. By the S. S. <i>Anglo Chilean</i> , at New York.			
Pool & Kelly	Colombo	New York	88,560	Various	London	New York	287,100
Adolph Hirsch & Co.	Colombo	New York	9,000	APRIL 26. By the S. S. <i>Manhattan</i> , at London.			287,100
Edward Maurer Co., Inc.	Colombo	New York	4,500	Winter, Ross & Co., Inc.	London	New York	79,560
General Rubber Co.	Colombo	New York	112,000	Alcides' Successors, Limited	London	New York	400,320
Meyer & Brown	Colombo	New York	35,280		Belgia, at New York.		479,880
Various	Colombo	New York	84,960	APRIL 26. By the S. S. <i>Belgia</i> , at New York.			
APRIL 21. By the S. S. <i>Seneca</i> , at New York.				Vernon Metal & Produce Co., Inc.	Liverpool	New York	11,340
J. T. Johnstone & Co., Inc.	Colombo	New York	35,100	Various	Liverpool	New York	1,800
The Goodyear Tire & Rubber Co.	Colombo	New York	306,000	APRIL 26. By the S. S. <i>Fushimi Maru</i> , at Seattle.			
F. Mannery & Co.	Colombo	New York	97,560	L. Littlejohn & Co., Inc.	Colombo	Seattle	30,240
Pool & Kelly	Colombo	New York	284,580	Edward Maurer Co., Inc.	Colombo	Seattle	60,480
Robinson & Co., Inc.	Colombo	New York	9,000	C. Trevanion & Co., Inc.	Colombo	Seattle	45,000
L. Littlejohn & Co., Inc.	Colombo	New York	137,520	Fred Stern & Co.	Colombo	Seattle	44,280
Charles T. Wilson & Co.	Colombo	New York	18,000	Alcides' Successors, Limited	Seattle		224,820
Fred Stern & Co.	Colombo	New York	35,820	APRIL 28. By the S. S. <i>Lake Colley</i> , at New York.			
Rubber Importers & Dealers' Co., Inc.	Colombo	New York	18,000	American Trading Co.	Cartagena	New York	4,680
W. R. Grace & Co.	Colombo	New York	46,440	APRIL 28. By the S. S. <i>Falatra</i> , at New York.			
C. Trevanion & Co., Inc.	Colombo	New York	37,240	Thomas J. Lipton	Colombo	New York	16,178
Hood Rubber Co.	Colombo	New York	130,140	A. C. Fox & Co.	Colombo	New York	42,900
General Rubber Co.	Colombo	New York	306,360	Fred Stern & Co.	Colombo	New York	56,050
L. Traves	Colombo	New York	441,000	Charles T. Wilson Co., Inc.	Colombo	New York	36,160
Various	Colombo	New York	563,680	Hood Rubber Co.	Colombo	New York	22,440
APRIL 22. By the S. S. <i>Padua</i> , at New York.				Rubber Importers & Dealers' Co., Inc.	Colombo	New York	44,960
W. Hammesfahr & Co.	Soerabaya	New York	54,180	E. S. Kuh & Volk	Colombo	New York	8,960
Robinson & Co., Inc.	Soerabaya	New York	76,500	W. R. Grace & Co.	Colombo	New York	149,221
L. Littlejohn & Co., Inc.	Soerabaya	New York	123,120	William H. Stiles & Co.	Colombo	New York	63,600
Fred Stern & Co.	Soerabaya	New York	237,140	Robinson & Co., Inc.	Colombo	New York	97,240
J. T. Johnstone & Co., Inc.	Soerabaya	New York	44,820	The Goodyear Tire & Rubber Co.	Colombo	New York	227,140
Edward Maurer Co., Inc.	Soerabaya	New York	28,440	Edward Maurer & Co., Inc.	Colombo	New York	134,040
Pool & Kelly	Soerabaya	New York	298,440	Slater, Forwood & Co.	Colombo	New York	56,050
United Malaysian Rubber Co., Inc.	Soerabaya	New York	19,080	L. Littlejohn & Co., Inc.	Colombo	New York	727,622
General Rubber Co.	Soerabaya	New York	772,040	Pool & Kelly	Colombo	New York	82,452
Robinson & Co., Inc.	Soerabaya	New York	348,660	Rubber Trading Co.	Colombo	New York	1,440
L. Littlejohn & Co., Inc.	Batavia	New York	51,300	APRIL 28. By the S. S. <i>Oridono Maru</i> , at Seattle.			
Firestone Tire & Rubber Co.	Batavia	New York	554,220	L. Littlejohn & Co., Inc.	Kobe	Seattle	26,160
Cats American Co., Inc.	Batavia	New York	8,640	Various	Kobe	Seattle	268,920
E. S. Kuh & Volk	Batavia	New York	256,860	APRIL 29. By the S. S. <i>Nippon Maru</i> , at Seattle.			
The Manhattan Rubber Mfg. Co.	Batavia	New York	54,000	Firestone Tire & Rubber Co.	Singapore	Akron	89,280
The Goodyear Tire & Rubber Co.	Batavia	New York	177,860	Alcides' Successors, Limited	Singapore	Seattle	3,960
Gaston, Williams & Wigmore	Batavia	New York	142,280	J. T. Johnstone & Co., Inc.	Penang	New York	120,600
Pool & Kelly	Batavia	New York	89,640	F. R. Henderson & Co., Inc.	Penang	Seattle	107,460
Edward Maurer Co., Inc.	Batavia	New York	61,380	L. Littlejohn & Co., Inc.	Penang	Seattle	111,960
A. C. Fox & Co.	Batavia	New York	10,080	Mogi & Co.	Penang	Seattle	109,080
C. B. Van Ryn	Batavia	New York	43,420	Rubber Importers & Dealers' Co., Inc.	Penang	New York	69,480
Robinson & Co., Inc.	Paseroean	New York	47,880	Hood Rubber Co.	Singapore	Watertown	50,400
Gaston, Williams & Wigmore	Paseroean	New York	104,040	Alcides' Successors, Limited	Penang	Seattle	37,160
Various	Batavia	New York	105,300	J. T. Johnstone & Co., Inc.	Penang	Seattle	250,023
APRIL 22. By the S. S. <i>Capita Miru</i> , at Seattle.				* 22 cases shortshipped.			
G. Kawahara & Co.	Kobe	Seattle	171,000	APRIL 29. By the S. S. <i>Protestant</i> , at Seattle.			
Alcides' Successors, Limited	Kobe	Seattle	55,080	United Malaysian Rubber Co., Inc.	Singapore	Seattle	100,800
W. R. Grace & Co.	Kobe	New York	42,660	Alcides' Successors, Limited	Singapore	Seattle	70,920
Firestone Tire & Rubber Co.	Kobe	St. Louis	99,180	E. Houshead & Co.	Singapore	Seattle	40,860
APRIL 23. By the S. S. <i>Akashi</i> , at New York.				Edward Maurer Co., Inc.	Singapore	Seattle	40,320
L. Littlejohn & Co., Inc.	Colombo	New York	1,022,500	Raw Products Co., Inc.	Singapore	Seattle	34,560
Rubber Trading Co.	Colombo	New York	56,160	Alcides' Successors, Limited	Penang	Seattle	405,540
Robinson & Co., Inc.	Colombo	New York	9,000	J. T. Johnstone & Co., Inc.	Penang	Seattle	136,980
Edward Maurer Co., Inc.	Colombo	New York	48,940	Pool & Kelly	Singapore	New York	738,160
Pool & Kelly	Colombo	New York	415,080	Rubber Importers & Dealers' Co., Inc.	Singapore	New York	22,320
Gaston, Williams & Wigmore	Colombo	New York	79,560	Fred Stern & Co.	Singapore	New York	376,200
Meyer & Brown	Colombo	New York	629,640	Robinson & Co., Inc.	Singapore	New York	107,640
Charles & Wilson	Colombo	New York	141,480	Rubber Trading Co.	Singapore	New York	52,020
Rosers-Pyatt Shellac Co.	Colombo	New York	117,720	Meyer & Brown	Singapore	Seattle	291,300
The Goodyear Tire & Rubber Co.	Colombo	New York	57,420				
Hood Rubber Co.	Colombo	New York	23,760				
Rubber Importers & Dealers' Co., Inc.	Colombo	New York	17,240				
J. T. Johnstone & Co., Inc.	Colombo	New York	320,060				2,928,560

	Shipment from:	Shipped to:	Pounds.	Totals.		Shipment from:	Shipped to:	Pounds.	Totals.	
Charles T. Wilson Co., Inc.	Singapore	New York	154,246		Moraux & Co.	Singapore	New York	44,820		
L. Littlejohn & Co., Inc.	Singapore	New York	243,000		Nostrand & Rademaker	Singapore	New York	180		
Curry, McPhillips & Co., Inc.	Singapore	New York	109,440		Gaston, Williams & Wigmore	Singapore	New York	63,720		
Hood Rubber Co.	Singapore	New York	48,400		United States Rubber Co.	Singapore	New York	973,620		
Firestone Tire & Rubber Co.	Singapore	Akron	607,980		Hood Rubber Co.	Singapore	New York	39,780		
The B. F. Goodrich & Co.	Singapore	Akron	1,766,160		Sveinhardt Tire & Rubber Co.	Singapore	New York	112,140		
Hood Rubber Co.	Singapore	Watertown	86,760		Firestone Tire & Rubber Co.	Singapore	New York	112,140		
Mexican Rubber Co.	Singapore	Pt. Sweet'sham	36,000		W. R. Grace & Co.	Singapore	New York	401,580		
Various	Singapore	New York	761,760	6,452,140	Mexican Crude Rubber Co.	Port Swettenham	New York	184,860		
APRIL 30. By the S. S. <i>Compagnie</i> , at New York.										
J. T. Johnstone & Co., Inc.	Singapore	New York	388,080		W. R. Grace & Co.	Port Swettenham	New York	77,760		
F. R. Henderson & Co.	Singapore	New York	752,180		F. R. Henderson & Co.	Penang	New York	71,280		
Robinson & Co.	Singapore	New York	159,340		Hood Rubber Co.	Penang	New York	27,000		
Fred Stern & Co.	Singapore	New York	908,820		W. R. Grace & Co.	Penang	New York	39,060		
Poel & Kelly	Singapore	New York	100,800		Various	Singapore	New York	530,100	7,685,900	
L. Littlejohn & Co., Inc.	Singapore	New York	387,000		May 14. By the S. S. <i>Tenredo</i> , at New York.	Singapore	San Fran.	183,300	183,300	
Charles T. Wilson Co., Inc.	Singapore	New York	252,180		Meyer & Brown	Singapore	San Fran.	183,300	183,300	
Edward Maurer Co., Inc.	Singapore	New York	220,800		May 16. By the S. S. <i>Comagrou</i> , at New York.	Gravenhorst & Co.	Kahului	New York	25,200	25,200
Rubber Trading Co.	Singapore	New York	19,980		May 16. By the S. S. <i>Transval</i> , at San Francisco.	L. Littlejohn & Co., Inc.	Singapore	New York	781,560	
William H. Siles & Co.	Singapore	New York	205,280		J. T. Johnstone & Co., Inc.	Singapore	New York	97,200		
W. R. Ryckman & Co.	Singapore	New York	48,600		Robinson & Co.	Singapore	New York	61,200		
Hagemeyer Trading Co.	Singapore	New York	23,320		Poel & Kelly	Singapore	New York	61,200		
Meyer & Brown	Singapore	New York	56,000		Meyer & Brown	Singapore	New York	99,000		
W. R. Grace & Co.	Singapore	New York	13,440		Rubber Trading Co.	Singapore	New York	116,000		
Sveinhardt Tire & Rubber Co.	Singapore	New York	106,320		William H. Siles & Co.	Singapore	New York	61,920		
Hood Rubber Co.	Singapore	New York	258,680		May 19. By the S. S. <i>Independence</i> , at New York.	The B. F. Goodrich Co.	Liverpool	Akron	38,520	
Aldens' Successors, Limited	Singapore	New York	213,660		Poel & Kelly	Liverpool	New York	170,640	209,160	
Federal Products Co.	Singapore	New York	213,660		Charles T. Wilson Co., Inc.	Liverpool	New York	5,940		
Mexican Crude Rubber Co.	Singapore	New York	89,600	4,439,460	Vernon Metal & Produce Co., Inc.	Liverpool	New York	14,760	20,700	
APRIL 30. By the S. S. <i>Mexico Maru</i> , at Seattle.										
Aldens' Successors, Limited	Singapore	Seattle	287,640		May 19. By the S. S. <i>Independence</i> , at New York.	T. D. Downing & Co., London	New York	67,500	67,500	
F. R. Henderson & Co.	Singapore	New York	87,600		May 20. By the S. S. <i>Tyndarus</i> , at New York.	Meyer & Brown	Singapore	Seattle	291,200	291,200
United Malaysian Rubber Co., Inc.	Singapore	New York	141,320		May 20. By the S. S. <i>Senator</i> , at New York.	Meyer & Brown	Singapore	Seattle	112,000	112,000
Mitsui & Co., Inc.	Singapore	New York	185,960		CENTRALS.					
Charles T. Wilson Co., Inc.	Singapore	New York	368,360		APRIL 28. By the S. S. <i>Panama</i> , at New York.	G. Amisnek & Co., Inc.	Cristobal	New York	11,900	
Edward Maurer Co., Inc.	Singapore	New York	459,540		G. Sembrado Co.	Cristobal	New York	4,000		
Charles Weis & Co.	Singapore	New York	78,120		Comacho Rueda	Cristobal	New York	9,500		
Hood Rubber Co.	Singapore	Waukegan	96,300		Various	Cristobal	New York	1,700	27,100	
Rubber Trading Co.	Singapore	New York	180,720		May 7. By the S. S. <i>Abangarez</i> , at New York.	Pablo Calvet & Co.	Cristobal	New York	1,400	1,400
Rubber Importers & Dealers' Co., Inc.	Singapore	New York	78,840		May 8. By the S. S. <i>Colon</i> , at New York.	G. Amisnek & Co., Inc.	Cristobal	New York	1,500	
Charles Well & Bobrd.	Singapore	Seattle	74,700		Charles E. Griffin	Cristobal	New York	2,800		
Raw Products Co.	Singapore	New York	20,960		De Lima Correa & Cortis	Cristobal	New York	1,800		
William H. Siles & Co.	Singapore	Tacoma	17,620		Heilbron, Wolf & Co.	Cristobal	New York	200	6,800	
Gates Rubber Co.	Singapore	Denver	720		May 10. By the S. S. <i>Alhambra</i> , at New York.	Isaac Brandon	Cristobal	New York	125	125
Meyer & Brown	Singapore	New York	85,100		May 16. By the S. S. <i>Mayaro</i> , at New York.	Various	Trinidad	New York	300	300
L. Littlejohn & Co., Inc.	Singapore	New York	94,500		May 14. By the S. S. <i>Veritas</i> , at New York.	Isaac Brandon & Bros.	Port Limon	New York	700	700
Robinson & Co.	Singapore	Seattle	30,160	2,586,060	BALATA.					
Various	Singapore	New York	276,300		APRIL 19. By the S. S. <i>Advance</i> , at New York.	Various	Cristobal	New York	6,900	6,900
May 1. By the S. S. <i>Defiance</i> , at New York.	London	New York	94,320	370,620	APRIL 28. By the S. S. <i>Panama</i> , at New York.	Hollinghurst & Co.	Cristobal	New York	600	600
Curry, McPhillips & Co.	London	New York	481,660	481,660	May 3. By the S. S. <i>Maturra</i> , at New York.	Yglesias & Co., Inc.	Trinidad	New York	10,000	
Various	London	New York	34,020		R. Fabian & Co., Inc.	Trinidad	New York	10,000	20,000	
May 5. By the S. S. <i>City of Norwich</i> , at New York.	Colombo	New York	180	180	May 2. By the S. S. <i>Philadelphia</i> , at New York.	G. Amisnek & Co., Inc.	La Guaira	New York	1,350	
Meyer & Brown	Colombo	New York	180	180	May 21. By the S. S. <i>Michigan</i> , at New York.	Poel & Kelly	London	New York	125,100	125,100
May 7. By the S. S. <i>Persia Maru</i> , at San Fran.	San Fran.	New York	109,800		PONTIANAK.					
Poel & Kelly	San Fran.	New York	109,800		APRIL 22. By the S. S. <i>Radja</i> , at New York.	E. S. Kulk & Valk Co.	Soerabaya	New York	10,000	
L. Littlejohn & Co., Inc.	San Fran.	New York	30,240		Various	Soerabaya	New York	207,000	217,000	
Rubber Importers & Dealers' Co., Inc.	Hongkong	New York	45,540		APRIL 30. By the S. S. <i>Blancfontein</i> , at New York.	United Malaysian Rubber Co.	Singapore	New York	93,300	93,300
May 9. By the S. S. <i>Baltic</i> , at New York.	Liverpool	New York	180	180	May 13. By the S. S. <i>Bolton Castle</i> , at New York.	D. W. Bousted & Co.	Singapore	New York	13,510	
Various	Liverpool	New York	180	180	Various	Singapore	New York	264,250		
May 12. By the S. S. <i>Paris</i> , at New York.	Cartagena	New York	5,220		F. R. Henderson & Co.	Singapore	New York	75,500		
American Trading Co.	Cartagena	New York	1,980		United States Rubber Co.	Singapore	New York	106,500	459,760	
Andean Trading Co.	Cartagena	New York	3,660	10,900	May 13. By the S. S. <i>Bolton Castle</i> , at New York.	Fred Stern & Co.	Singapore	New York	106,500	459,760
Various	Cartagena	New York	3,660	10,900	D. W. Bousted & Co.	Singapore	New York	106,500	459,760	
May 13. By the S. S. <i>Bolton Castle</i> , at New York.	Singapore	New York	466,740		Various	Singapore	New York	106,500	459,760	
F. R. Henderson & Co.	Singapore	New York	69,000		May 13. By the S. S. <i>Bolton Castle</i> , at New York.	Fred Stern & Co.	Singapore	New York	106,500	459,760
United Malaysian Rubber Co.	Singapore	New York	956,340		Various	Singapore	New York	106,500	459,760	
L. Littlejohn & Co., Inc.	Singapore	New York	233,320		May 13. By the S. S. <i>Bolton Castle</i> , at New York.	Fred Stern & Co.	Singapore	New York	106,500	459,760
Fred Stern & Co.	Singapore	New York	210,440		May 13. By the S. S. <i>Bolton Castle</i> , at New York.	Fred Stern & Co.	Singapore	New York	106,500	459,760
E. S. Kulk & Valk Co.	Singapore	New York	54,000		Various	Singapore	New York	106,500	459,760	
E. Naumburg	Singapore	New York	158,400		May 13. By the S. S. <i>Bolton Castle</i> , at New York.	Fred Stern & Co.	Singapore	New York	106,500	459,760
Balfour, Williamson & Co.	Singapore	New York	158,400		Various	Singapore	New York	106,500	459,760	
J. T. Johnstone & Co., Inc.	Singapore	New York	160,180		May 13. By the S. S. <i>Bolton Castle</i> , at New York.	Fred Stern & Co.	Singapore	New York	106,500	459,760
Robinson & Co.	Singapore	New York	275,580		Various	Singapore	New York	106,500	459,760	
W. R. Grace & Co.	Singapore	New York	37,440		May 13. By the S. S. <i>Bolton Castle</i> , at New York.	Fred Stern & Co.	Singapore	New York	106,500	459,760
Rubber Trading Co.	Singapore	New York	24,880		Various	Singapore	New York	106,500	459,760	
The Goodyear Tire & Rubber Co.	Singapore	New York	608,400		May 13. By the S. S. <i>Bolton Castle</i> , at New York.	Fred Stern & Co.	Singapore	New York	106,500	459,760
Rubber Importers & Dealers' Co., Inc.	Singapore	New York	112,400		Various	Singapore	New York	106,500	459,760	
Meyer & Brown	Singapore	New York	840,000		May 13. By the S. S. <i>Bolton Castle</i> , at New York.	Fred Stern & Co.	Singapore	New York	106,500	459,760
Edward Maurer Co., Inc.	Singapore	New York	24,300		Various	Singapore	New York	106,500	459,760	
Curry, McPhillips & Co.	Singapore	New York	210,240		May 13. By the S. S. <i>Bolton Castle</i> , at New York.	Fred Stern & Co.	Singapore	New York	106,500	459,760
Charles T. Wilson Co., Inc.	Singapore	New York	274,680		Various	Singapore	New York	106,500	459,760	
Raw Products Co.	Singapore	New York	166,380		May 13. By the S. S. <i>Bolton Castle</i> , at New York.	Fred Stern & Co.	Singapore	New York	106,500	459,760
S. Katz	Singapore	New York	180		Various	Singapore	New York	106,500	459,760	
Osakidi & Sweeney	Singapore	New York	53,820		May 13. By the S. S. <i>Bolton Castle</i> , at New York.	Fred Stern & Co.	Singapore	New York	106,500	459,760

GUTTA PERCHA.

Shipment from:	Shipped to:	Pounds.	Totals.
APRIL 22. By the S. S. <i>Radja</i> , at New York.			
United Malaysian Rubber Co.	Soerabaya New York	15,500	15,600
MAY 1. By the S. S. <i>Defiance</i> , at New York.			
Carle Bros.	London New York	51,150	51,150
MAY 13. By the S. S. <i>Bolton Castle</i> , at New York.			
L. Edelstein & Co., Inc.	Singapore New York	12,250	12,250
APRIL 30. By the S. S. <i>Bloemfontein</i> , at New York.			
Various	Singapore New York	3,250	3,250

APRIL 30. By the S. S. <i>Bloemfontein</i> , at New York.			
United Malaysian Rubber Co.	Singapore New York	305,000	305,000
MAY 21. By the S. S. <i>Michigan</i> , at New York.			
Various	London New York	22,000	22,000

AFRICANS.

APRIL 28. By the S. S. <i>Chicago</i> , at New York.			
Various	Bordeaux New York	118,105	118,105
MAY 16. By the S. S. <i>Nembe</i> , at New York.			
Inner & Co.	Dokas New York	47,875	
Alex Roberts Co.	Dokas New York	24,375	
Various	Dokas New York	3,750	76,500
MAY 17. By the S. S. <i>Hadi</i> , at New York.			
Various	Bordeaux New York	93,035	93,035

UNITED KINGDOM RUBBER STATISTICS.

IMPORTS.

Month Ended March 31.

	1918.		1919.	
	POUNDS.	VALUE.	POUNDS.	VALUE.
UNMANUFACTURED -				
Crude rubber:				
From:				
Dutch East Indies.....	107,200	£12,693	1,544,100	£170,662
French West Africa.....	47,000	2,110		
Gold Coast.....	5,400	985	27,300	2,609
Other African countries.....	571,000	58,183	492,900	51,156
Peru.....	220,900	23,226	33,100	4,323
Brazil.....	2,120,000	321,539	2,237,200	280,988
British India.....	396,400	51,143	2,235,200	149,941
Straits Settlements and dependencies, including Labuan.....	562,600	68,625	7,365,000	792,931
Federated Malay States.....	187,300	24,069	4,538,300	530,116
Ceylon dependencies.....	1,356,800	159,410	3,479,400	386,724
Other countries.....	217,200	25,330	435,100	50,345
Totals.....	6,166,900	£747,328	22,787,600	£2,480,792
Waste and reclaimed rubber.....	30,850	384	80,400	210
Gutta percha.....	6,196,300	£747,672	22,468,000	£2,482,932
Totals.....	6,227,150	£748,056	22,548,400	£2,483,142
MANUFACTURED—				
Boots and shoes, dozen pairs.....	5,305	£59,876	3,538	£5,495
Waterproofed clothing.....			993	
Automobile tires and tubes.....		95,216	83,871	
Motorcycle tires and tubes.....		1,459	4,711	
Carriage tires and tubes.....			160	
Bicycle tires and tubes.....		2,479	2,472	
Insulated wire.....			2,472	
Totals.....		£159,189		£97,502

EXPORTS.

UNMANUFACTURED—				
Waste and reclaimed rubber.....	890,500	£20,341	790,700	£20,634
MANUFACTURED—				
Waterproofed clothing.....		33,519		86,262
Boots and shoes, dozen pairs.....	7,953	9,156	6,187	11,631
Insulated wire.....		5,609		35,537
Submarine cables.....		3,811		47,496
Carriage tires and tubes.....		8,564		27,991
Automobile tires and tubes.....		109,492		212,361
Motorcycle tires and tubes.....		8,355		30,884
Bicycle tires and tubes.....		29,319		73,478
Other rubber manufactures.....		138,530		562,547
Totals, manufactures.....		£346,432		£785,407

EXPORTS—COLONIAL AND FOREIGN.

UNMANUFACTURED—				
Crude rubber:				
To Belgium			120,100	£12,181
France	3,398,800	£438,201	3,914,800	404,133
Italy	450,900	59,378	1,202,000	136,233
Portugal	231,000	20,932	858,000	87,849
Other countries	95,000	11,540	446,000	51,239
Totals	3,177,700	£530,061	14,267,900	£1,482,392
Waste and reclaimed rubber:				
			2,100	90
Totals	4,177,700	£530,061	14,270,000	£1,482,372
Gutta percha				
	4,200	£13	69,500	13,611
MANUFACTURED—				
Boots and shoes, dozen pairs	9	£18	1	248
Waterproofed clothing			139	
Insulated wire		18,143		11,776
Automobile tires				

Motorcycle tires and tubes.....	1,135	£731
Bicycle tires and tubes.....	651	1,543
Carriage tires and tubes.....	1	153
Totals.....	£19,319	£14,150

OFFICIAL INDIA RUBBER STATISTICS FOR THE UNITED STATES.

IMPORTS OF CRUDE AND MANUFACTURED RUBBER.

	March 1919			
	Pounds.	Value.	Pounds.	Value.
UNMANUFACTURED—free:				
India rubber:				
From France.....	43,851	\$16,315	181,784	\$50,403
Portugal.....	3,400	16,235		
United Kingdom.....	336,640	164,854	8,543,628	4,059,734
Canada.....	75,513	20,635	3,303,663	1,586,119
Central America.....	63,609	20,800	106,319	47,788
Mexico.....	678,654	200,744	6,139,808	2,046,296
Brazil.....	5,164	5,310	1,666,827	536,946
Other South America.....	243,213	107,147	205,870	68,623
British East Indies.....	22,907,284	12,093,316	41,483,559	15,991,931
Dutch East Indies.....	3,442,734	1,804,512	2,334,091	1,108,627
Other countries.....	21,970	9,746	106,289	42,935
Totals.....	27,851,110	\$14,471,453	64,640,967	\$25,581,427
Malaya.....	116,713	72,021	39,804	20,344
Guayule.....	4,700	1,162	420,927	14,787
Telutene (Pontianak).....	811,044	66,125	1,678,784	250,871
Gutta percha.....	19,564	1,910	1,009,209	355,902
Totals.....	952,011	\$142,218	3,148,604	\$539,994
Rubber scrap.....	1,050,490	80,181	37,809	21,234
Totals, unmanufactured.....	29,853,621	\$14,693,852	68,168,670	\$26,142,655
Chicle.....	580,803	370,503	849,507	563,200
MANUFACTURED—dutiable:				
India rubber and gutta percha.....		\$28,485		77,362
India rubber substitutes.....		29,127	7,850	1,274

EXPORTS OF DOMESTIC MERCHANDISE.

MANUFACTURED—				
Automobile tires ¹		\$934,631		\$1,891,220
All other tires ¹		37,839		112,441
Scrap and old tires.....		33,631	261,495	26,049
Reclaimed rubber.....		434,477	79,314	46,136
Beltting, hose, and packing.....		284,786		575,449
Rubber boots.....		100,576		56,836
Rubber shoes ²	pair	50,555		37,761
Ruggists' rubber sundries ³		37,117		99,466
Insulated wire and cables ⁴		500,738		1,025,867
Other rubber manufactures ⁵		296,303		681,800
Totals, manufactured.....				
Fountain pens.....	number	5,789	5,122	17,519
				21,591

EXPORTS OF FOREIGN MERCHANDISE.

UNMANUFACTURED—				
India rubber	1,041,492	\$503,396	405,067	\$192,991
Malaya	159,693	106,194	28,000	18,417
Gutta percha	8,297	2,500		
Totals, unmanufactured.....	1,209,482	\$612,090	433,067	\$211,408
MANUFACTURED—				
India rubber		\$40		\$234
Gutta percha		32		
Rubber substitutes, elastic, etc.....		661		
Totals, manufactured.....		\$723		\$234
Chicle	14,509	10,597	10	22

EXPORTS OF RUBBER GOODS TO NON-CONTIGUOUS TERRITORIES OF THE UNITED STATES.

MANUFACTURED—				
To Alaska:				
Beltting, hose, and packing.....		\$2,372		\$9,319
Boots and shoes..... <i>pairs</i>	4,784	15,438	9,400	29,606
Other rubber goods.....		22,441		5,693
Totals.....		\$40,251		\$44,618
To Hawaii:				
Beltting, hose and packing.....		\$7,830		\$17,741
Automobile tires.....		40,777		149,812
Other tires.....		2,490		7,429
Other rubber goods.....		8,476		11,728
Totals.....		\$59,573		\$186,710
To Philippine Islands:				
Beltting, hose and packing.....		\$16,441		\$4,955
Boots and shoes..... <i>pairs</i>	29,314	25,943	19,111	17,665
Tires.....		188,528		108,301
Other goods.....		25,476		25,663
Totals.....		\$253,380		\$153,585
To Porto Rico:				
Beltting, hose and packing.....		\$3,983		\$6,915
Automobile tires.....		47,002		97,971
Other tires.....		889		2,801
Other rubber goods.....		8,197		35,016
Totals.....		\$60,971		\$141,903

Details of exports of domestic merchandise by countries during March, 1919, are given on page 528 of this issue.

Official India Rubber Statistics for the United States.

Fiscal Year Ended June 30, 1918.

INDIA RUBBER.

IMPORTS OF CRUDE INDIA RUBBER BY COUNTRIES (FREE).

From	Pounds	Value
EUROPE—		
France	508,017	\$235,805
Portugal	538,076	220,133
England	21,926,945	12,793,606
Totals, Europe	22,973,038	\$13,239,542
NORTH AMERICA—		
British Honduras	609	\$323
Canada	4,247,287	2,518,248
Central American States		
Guatemala	50,387	25,646
Honduras	70,839	20,755
Nicaragua	29,246	13,880
Costa Rica	300,880	111,199
Salvador	255,252	104,105
El Salvador	28,411	11,339
Totals, North America	1,033,087	451,915

From	Pounds	Value
British Honduras	55,016	\$1,932
France	7,497	7,175
Portugal	4,390	1,452
Dominican Republic	4,839	3,544
Totals, North America	6,090,130	\$3,301,513

From	Pounds	Value
ARGENTINA	912,604	\$302,874
Brazil	41,277,914	14,307,158
Chile	9,055	3,716
Colombia	1,042,697	436,423
Ecuador	631,107	256,526
Guiana		
Dutch	60,646	42,885
Paraguay	8,239	5,525
Peru	7,938	3,105
Uruguay	3,565,094	1,471,823
Venezuela	53,531	33,520
Venezuela	456,427	214,783
Totals, South America	48,025,613	\$17,078,332

From	Pounds	Value
ASIA		
China	11,763	\$5,605
China, leased territory—		
French	15,880	6,041
East India—		
British		
British India	5,758,850	2,782,122
Straits Settlements	221,389,870	117,901,120
Other British	31,097,004	17,641,754
Dutch	53,663,857	30,504,525
Hongkong	324,703	208,252
Japan	61,160	37,481
Totals, Asia	312,322,887	\$169,086,900

From	Pounds	Value
OCEANIA—		
Australia	4,721	\$3,883
New Zealand	6,835	3,324
Other British	17,409	12,041
German	10,850	6,039
Philippine Islands	80,644	46,498
Totals, Oceania	120,479	\$65,985

From	Pounds	Value
AFRICA		
British West Africa	23,840	\$7,591
British South Africa	4,614	2,731
Portuguese Africa	38,414	17,808
Totals, Africa	66,868	\$28,120

Totals, 1917-18	389,599,015	\$202,800,392
Totals, 1916-17	333,773,711	189,328,674
Totals, 1915-16	267,775,557	155,044,790
Totals, 1914-15	233,000,269	133,000,269
Totals, 1913-14	131,995,742	71,219,851
Totals, 1912-13	113,384,359	90,170,316
Totals, 1911-12	110,210,173	90,013,255
Totals, 1910-11	72,046,260	76,244,603
Totals, 1909-10	101,044,681	101,078,825
Totals, 1908-09	88,359,895	61,709,723
Totals, 1907-08	62,233,160	36,613,185
Totals, 1906-07	76,963,838	58,919,981
Totals, 1905-06	57,844,345	45,114,450

IMPORTS OF CRUDE INDIA RUBBER BY CUSTOMS DISTRICTS (FREE).

At—	Pounds	Value
Massachusetts	4,327,090	\$1,979,103
New York	171,643,218	\$3,365,120
Philadelphia	15,792	6,601
Florida	2,098	852
New Orleans	193,412	91,803
San Antonio	33,190	8,503
San Francisco	80,907,215	47,415,050
Southern California	160,136	103,201
Washington	107,089,467	56,395,269
Buffalo	2,102,470	1,184,422
Chicago	809,095	466,643
Dakota	3,471,093	1,656,887
Illinois	1,820,822	1,131,196
Ohio	12,944,474	6,932,047
St. Lawrence	435,388	217,432
Vermont	3,344,487	1,694,079
Minnesota	299,568	149,784
Totals, 1917-18	389,599,015	\$202,800,392

IMPORTS OF MANUFACTURES OF INDIA RUBBER BY COUNTRIES (DUTIABLE).

From	Pounds	Value
United Kingdom	284,128	\$118,281
Scotland	19,078	\$7,918
Ireland	5	\$0.00
Totals, Europe	313,720	\$126,199
Canada	174,756	\$71,756
Panama	250	\$0.00
Mexico	250	\$0.00
Totals, North America	175,008	\$71,756

From	Pounds	Value
BRITISH INDIA		
British India	5,758,850	2,782,122
Straits Settlements	221,389,870	117,901,120
Other British	31,097,004	17,641,754
Dutch	53,663,857	30,504,525
Hongkong	324,703	208,252
Japan	61,160	37,481
Totals, Asia	312,322,887	\$169,086,900

From	Pounds	Value
AFRICA		
British West Africa	23,840	\$7,591
British South Africa	4,614	2,731
Portuguese Africa	38,414	17,808
Totals, Africa	66,868	\$28,120
Totals, 1917-18	389,599,015	\$202,800,392
Totals, 1916-17	333,773,711	189,328,674
Totals, 1915-16	267,775,557	155,044,790
Totals, 1914-15	233,000,269	133,000,269
Totals, 1913-14	131,995,742	71,219,851
Totals, 1912-13	113,384,359	90,170,316
Totals, 1911-12	110,210,173	90,013,255
Totals, 1910-11	72,046,260	76,244,603
Totals, 1909-10	101,044,681	101,078,825
Totals, 1908-09	88,359,895	61,709,723
Totals, 1907-08	62,233,160	36,613,185
Totals, 1906-07	76,963,838	58,919,981
Totals, 1905-06	57,844,345	45,114,450

IMPORTS OF INDIA RUBBER BY CUSTOMS DISTRICTS (DUTIABLE).

At—	Pounds	Value
Massachusetts	4,327,090	\$1,979,103
New York	171,643,218	\$3,365,120
Philadelphia	15,792	6,601
Florida	2,098	852
New Orleans	193,412	91,803
San Antonio	33,190	8,503
San Francisco	80,907,215	47,415,050
Southern California	160,136	103,201
Washington	107,089,467	56,395,269
Buffalo	2,102,470	1,184,422
Chicago	809,095	466,643
Dakota	3,471,093	1,656,887
Illinois	1,820,822	1,131,196
Ohio	12,944,474	6,932,047
St. Lawrence	435,388	217,432
Vermont	3,344,487	1,694,079
Minnesota	299,568	149,784
Totals, 1917-18	389,599,015	\$202,800,392

At	Pounds	Value
Michigan	47,850	\$16,001
Montana and Idaho	2,336	\$0.00
Rochester	267	\$0.00
St. Louis	264	\$0.00
Wisconsin	76	\$0.00
Minnesota	70	\$0.00
Illinois	4,694	\$0.00
Pittsburg	7	\$0.00
St. Louis	60	\$0.00
Utah and Nevada	60	\$0.00
Totals, 1917-18	559,763	\$198,811

REEXPORTS OF IMPORTED CRUDE INDIA RUBBER.

To—	Pounds	Value
France	1,100	\$17,338
England	40	135
Canada	7,649,751	3,937,322
Cuba	274,107	152,507
Japan	9,798	6,443
Australia	252,824	160,808
Totals, 1917-18	8,208,289	\$4,274,543
Totals, 1916-17	12,355,898	7,304,820
Totals, 1915-16	4,662,889	2,661,331
Totals, 1914-15	6,383,145	3,361,107
Totals, 1913-14	3,747,749	2,398,150
Totals, 1912-13	5,272,387	4,476,379
Totals, 1911-12	5,610,951	4,890,905
Totals, 1910-11	5,267,588	4,539,282
Totals, 1909-10	6,492,947	7,629,380
Totals, 1908-09	2,964,909	2,964,909
Totals, 1907-08	4,110,667	2,994,208
Totals, 1906-07	4,215,350	3,593,912

REEXPORTS OF MANUFACTURES OF INDIA RUBBER.

To—	Pounds	Value
England	1,100	\$17,338
Canada	40	135
Nicaragua	19	\$0.00
Cuba	174	\$0.00
Dominican Republic	9	\$0.00
New Zealand	954	\$0.00
Other British	2	\$0.00
Totals, 1917-18	13,563	\$13,563
Totals, 1916-17	10,905	\$10,905
Totals, 1915-16	38,649	\$38,649
Totals, 1914-15	7,489	\$7,489
Totals, 1913-14	7,638	\$7,638
Totals, 1912-13	7,973	\$7,973
Totals, 1911-12	6,681	\$6,681
Totals, 1910-11	29,356	\$29,356
Totals, 1909-10	15,568	\$15,568
Totals, 1908-09	36,401	\$36,401
Totals, 1907-08	176,129	\$176,129
Totals, 1906-07	32,712	\$32,712

GUTTA PERCHA.

IMPORTS OF CRUDE GUTTA PERCHA BY COUNTRIES (FREE).

From	Pounds	Value
EUROPE—		
France	2,751	\$6,239
NORTH AMERICA—		
Canada	250	\$11
SOUTH AMERICA—		
Colombia	1,104	\$207
ASIA—		
Straits Settlements	543,766	\$75,487
Dutch East Indies	547,944	56,206
Totals, Asia	1,091,710	\$131,693
AFRICA—		
Philippine Islands	13,057	\$1,781
British West Africa	22,400	\$7,392
Totals, 1917-18	1,151,312	\$147,323
Totals, 1916-17	2,021,794	332,223
Totals, 1915-16	3,188,449	342,226
Totals, 1914-15	1,618,214	230,505
Totals, 1913-14	1,846,109	323,567
Totals, 1912-13	480,853	167,313
Totals, 1911-12	1,304,406	225,797
Totals, 1910-11	1,648,921	390,548
Totals, 1909-10	784,501	167,873
Totals, 1908-09	255,359	62,136
Totals, 1907-08	188,610	100,305
Totals, 1906-07	546,890	201,339
Totals, 1905-06	500,770	188,161

IMPORTS OF CRUDE GUTTA PERCHA BY CUSTOMERS DISTRICTS (FREE).		
At—	Pounds.	Value.
New York	2,580	\$4,488
San Francisco	17,478	18,179
Washington	280	11
Dallas	1	1
Totals	1,181,342	\$147,353

IMPORTS OF MANUFACTURES OF GUTTA PERCHA BY COUNTRIES (DUTABLE).		
From—	Pounds.	Value.
Lyons	2,564	\$2,564
Sweden	3	3
United Kingdom—		
England	7,176	5,388
Scotland	1,659	1,659
Ireland	1,659	1,659
Total, Europe	\$16,790	
North America—		
Canada	818	

IMPORTS OF MANUFACTURED GUTTA PERCHA BY CUSTOMERS DISTRICTS (DUTABLE).		
At—	Pounds.	Value.
Maryland	831	\$31
Massachusetts	455	455
New York	16,455	16,455
Port Rico	3	3
Duluth and Superior	7	7
Rochester	28	28
Total	\$16,978	

REEXPORTS OF CRUDE GUTTA PERCHA.		
To—	Pounds.	Value.
England	2,000	2,600
Canada	20,000	2,600
Totals	202,646	\$47,211
Totals, 1917-18	16,663	558
Totals, 1916-17	60,023	11,446
Totals, 1915-16	14,649	5,255
Totals, 1914-15	22,352	6,065
Totals, 1913-14	62,391	19,235
Totals, 1912-13	74,137	13,886
Totals, 1911-12	9,370	3,730
Totals, 1910-11	5,000	700

REEXPORTS OF MANUFACTURES OF GUTTA PERCHA.		
To—	Pounds.	Value.
England	13,608	\$4,552
Canada	50	13,608
Mexico	50	50
British West Indies	50	50
Totals	18,116	\$18,116
Totals, 1917-18	42	42
Totals, 1916-17	537	537
Totals, 1915-16	537	537
Totals, 1914-15	537	537
Totals, 1913-14	537	537
Totals, 1912-13	537	537
Totals, 1911-12	537	537
Totals, 1910-11	537	537

REEXPORTS OF MANUFACTURES OF GUTTA PERCHA.		
To—	Pounds.	Value.
England	13,608	\$4,552
Canada	50	13,608
Mexico	50	50
British West Indies	50	50
Totals	18,116	\$18,116
Totals, 1917-18	42	42
Totals, 1916-17	537	537
Totals, 1915-16	537	537
Totals, 1914-15	537	537
Totals, 1913-14	537	537
Totals, 1912-13	537	537
Totals, 1911-12	537	537
Totals, 1910-11	537	537

IMPORTS OF GUAYULE.		
IMPORTS OF GUAYULE BY COUNTRIES (FREE).		
From—	Pounds.	Value.
North America—		
Mexico	4,298,739	\$1,337,047
South America—		
Colombia	8,800	\$4,048
Totals, 1917-18	4,307,539	\$1,341,095
Totals, 1916-17	8,854,372	764,484
Totals, 1915-16	2,816,068	880,813
Totals, 1914-15	5,111,849	1,441,367
Totals, 1913-14	1,475,804	607,076
Totals, 1912-13	10,218,911	4,345,088
Totals, 1911-12	14,238,625	6,463,787
Totals, 1910-11	19,749,522	10,443,157

IMPORTS OF GUAYULE BY CUSTOMERS DISTRICTS (FREE).		
At—	Pounds.	Value.
New York	8,800	\$4,048
El Paso	47,959	8,631
San Antonio	4,250,789	1,328,416
Totals	4,307,539	\$1,341,095

REEXPORTS OF GUAYULE.		
To—	Pounds.	Value.
Canada	17,725	\$5,231

JELUTONG.		
IMPORTS OF JELUTONG BY COUNTRIES (FREE).		
From—	Pounds.	Value.

IMPORTS OF JELUTONG BY COUNTRIES (FREE).		
From—	Pounds.	Value.
England	2,675	\$113
South America—		
Colombia	16,825	\$4,238
Strait Settlements	5,260,657	\$844,900
Other British Indies	2,503,000	3,900
Dutch East Indies	2,135,688	11,738
Japan	37,447	3,475
Totals, Asia	7,461,792	\$470,015
Totals, 1917-18	7,461,792	\$474,386
Totals, 1916-17	2,491,085	113,386
Totals, 1915-16	27,858,335	1,322,262
Totals, 1914-15	14,851,264	731,995
Totals, 1913-14	2,426,571	115,402
Totals, 1912-13	45,345,338	2,174,441
Totals, 1911-12	48,795,268	2,235,050
Totals, 1910-11	51,403,317	2,672,633
Totals, 1909-10	32,392,444	2,419,223
Totals, 1908-09	24,826,296	852,372
Totals, 1907-08	22,823,793	1,039,776
Totals, 1906-07	28,437,660	1,085,098

IMPORTS OF JELUTONG BY CUSTOMERS DISTRICTS (FREE).		
At—	Pounds.	Value.
New York	4,557,594	\$382,307
San Francisco	893,118	77,253
Washington	2,019,685	113,386
Vermont	11,495	1,420
Totals	7,461,792	\$474,386

IMPORTS OF JELUTONG BY COUNTRIES (DUTABLE).		
From—	Pounds.	Value.

REEXPORTS OF JELUTONG.		
To—	Pounds.	Value.
Canada	72,255	\$9,619

BALATA.		
IMPORTS OF BALATA BY COUNTRIES (FREE).		
From—	Pounds.	Value.
North America—		
Costa Rica	2,597	\$1,352
Panama	976,357	397,293
West Indies	40,443	26,255
Trinidad and Tobago	3,566	2,781
Other British	3,566	2,781
Totals, North America	1,022,963	\$427,681
South America—		
Brazil	639	\$122
Colombia	495,468	213,828
Ecuador	3,150	1,490
British	236,286	184,202
Dutch	362,534	272,727
Venezuela	328,831	178,360
Totals, South America	1,426,918	\$850,529
Totals, 1917-18	2,449,835	1,276,610
Totals, 1916-17	3,287,445	1,649,452
Totals, 1915-16	2,544,405	996,102
Totals, 1914-15	2,472,224	963,384
Totals, 1913-14	1,533,024	793,126
Totals, 1912-13	1,318,598	766,772
Totals, 1911-12	981,912	598,912
Totals, 1910-11	878,305	624,702
Totals, 1909-10	399,003	196,878
Totals, 1908-09	1,157,018	528,672
Totals, 1907-08	584,532	276,756
Totals, 1906-07	799,029	305,041
Totals, 1905-06	126,689	52,689

IMPORTS OF BALATA BY CUSTOMERS DISTRICTS (FREE).		
At—	Pounds.	Value.
New York	2,449,831	\$1,278,610

REEXPORTS OF BALATA.		
To—	Pounds.	Value.
Canada	407,868	\$254,777
United States	10,019	436,735
Canada	9,767	3,810
China	6,162	4,910
Japan	12,433	17,443
Australia	3,395	17,448

REEXPORTS OF BALATA.		
To—	Pounds.	Value.
Totals, 1917-18	473,915	\$303,338
Totals, 1916-17	879,765	474,538
Totals, 1915-16	667,168	245,329
Totals, 1914-15	1,233,963	436,735
Totals, 1913-14	118,334	77,963
Totals, 1912-13	118,334	77,963
Totals, 1911-12	264,539	235,575
Totals, 1910-11	42,750	42,750
Totals, 1909-08	18,741	18,741
Totals, 1908-07	12,659	12,659

RECLAIMED RUBBER.		
EXPORTS OF RECLAIMED RUBBER BY COUNTRIES.		
To—	Pounds.	Value.

EXPORTS OF RECLAIMED RUBBER BY COUNTRIES.		
To—	Pounds.	Value.
Europe—		
France	227,806	\$31,631
Italy	256,810	60,869
United Kingdom—		
England	40,134	10,496
Totals, Europe	524,746	\$102,996
North America—		
Canada	2,713,656	455,147
Costa Rica	500	104
Mexico	285	39
Cuba	24,727	5,673
Totals, North American	2,739,168	\$460,963
Asia—		
Japan	20,350	\$3,211
British South Africa	890	108

EXPORTS OF RECLAIMED RUBBER BY CUSTOMS DISTRICTS.		
At—	Pounds.	Value.
New York	571,017	\$112,902
El Paso	285	99
Buffalo	1,694,284	290,628
Dakota	2,300	376
Michigan	15,057	1,179
St. Lawrence	277,457	48,812
Vermont	724,558	113,902
Totals	3,284,958	\$567,278

SUBSTITUTES, ELASTICON, ETC.		
IMPORTS OF ELASTICON AND SIMILAR SUBSTITUTES FOR INDIA RUBBER BY COUNTRIES (DUTABLE).		
From—	Pounds.	Value.

IMPORTS OF ELASTICON AND SIMILAR SUBSTITUTES FOR INDIA RUBBER BY COUNTRIES (DUTABLE).		
From—	Pounds.	Value.
Europe—		
England	1,360	\$1,360
North America—		
Canada	8	8
Straits Settlements	628,329	\$1,360
Dutch East Indies	677	677
Japan	1,360	1,360
Totals, Asia	\$135,070	
Totals, 1917-18	1,360	\$1,360
Totals, 1916-17	39,813	39,813
Totals, 1915-16	1,360	1,360
Totals, 1914-15	30,349	30,349
Totals, 1913-14	87,642	87,642
Totals, 1912-13	1,360	1,360
Totals, 1911-12	87,328	87,328
Totals, 1910-11	115,601	115,601
Totals, 1909-10	60,623	60,623
Totals, 1908-09	27,000	27,000

IMPORTS OF ELASTIC AND SIMILAR SUBSTITUTES OF INDIA RUBBER BY CUSTOMS DISTRICTS (DUTIABLE).

	Pounds.	Value.
At—		
Massachusetts	81,560	193,837
New York	87,361	27
Alaska	.....	.....
Washington	37,706	193,854
Total	146,627	220,898

REEXPORTS OF ELASTIC AND SIMILAR SUBSTITUTES OF INDIA RUBBER BY COUNTRIES.

	Pounds.	Value.
From—		
Canada	11,012	27,384
Mexico	.....	.....
French Oceania	.....	.....
Total 1917-18	11,012	27,384

SCRAP RUBBER.

IMPORTS OF SCRAP RUBBER BY COUNTRIES (FREE).

	Pounds.	Value.
To—		
Europe	1,461,772	119,481
France	662,276	52,106
Norway	66,283	5,316
United Kingdom	5,411	431
England	2,000,000	160,000
Scotland	90,000	7,200
Total, Europe	2,000,000	160,000
North America	1,975,311	158,025
Canada	.....	.....
Central America	.....	.....
Costa Rica	200	16
Panama	60,050	4,804
Mexico	98,567	7,885
Newcombin and Labrador	5,343	431
West Indies	.....	.....
Jamaica	22,400	1,792
Trinidad and Tobago	.....	.....
Other British	2,504	200
Cuba	48,798	3,903
Dominican Republic	1,842	147
Total, North America	2,703,780	217,942
South America	.....	.....
Argentina	2,682,864	214,629
Brazil	789,336	63,146
Colombia	115	9
Venezuela	3,759	300
Total, South America	1,425,281	118,035

	Pounds.	Value.
At—		
India	41,264	3,051
Oceania	.....	.....
Australia	.....	.....
New Zealand	.....	.....
Totals, Oceania	105,089	7,885
British West Indies	.....	.....

	Pounds.	Value.
Totals, 1917-18	13,980,833	1,109,222
Totals, 1916-17	20,517,328	1,569,444
Totals, 1915-16	16,371,573	1,271,903
Totals, 1914-15	11,006,928	726,914
Totals, 1913-14	25,958,261	2,063,198
Totals, 1912-13	43,385,456	3,709,233
Totals, 1911-12	26,291,192	2,095,605
Totals, 1910-11	26,364,671	2,098,977
Totals, 1909-10	26,364,671	2,098,977
Totals, 1908-09	27,467,595	2,145,267
Totals, 1907-08	16,331,035	1,496,822
Totals, 1906-07	29,315,193	2,607,987

IMPORTS OF SCRAP RUBBER BY COUNTRIES (FREE).

	Pounds.	Value.
At—		
Maine and New Hampshire	124,150	\$15,145
Maryland	203,961	33,630
Massachusetts	17,689	1,407
New York	11,211,940	810,227
Philadelphia	67,440	5,440
Calverton	54,300	4,344
Arizona	1,687	135
El Paso	522	42
San Francisco	84,219	6,737
Southern California	1,832	149
Washington	.....	.....
Dakota	5,000	400
Idaho and Superior	358,479	28,678
Michigan	20,082	1,606
Ohio	130,022	10,402
Recheiter	30,000	2,400
St. Lawrence	115	9
Vermont	73,049	5,844
Totals	13,680,361	1,109,222

EXPORTS OF SCRAP RUBBER BY COUNTRIES.

	Pounds.	Value.
To—		
France	141,990	\$39,191
England	3,143	253
Scotland	19,183	1,534
Totals, Europe	164,316	\$41,929

	Pounds.	Value.
To—		
North America	1,951,976	193,837
Mexico	.....	.....
Totals, North America	1,952,154	193,854
Asia	.....	.....
China	787	28

	Pounds.	Value.
Totals, 1917-18	2,117,257	235,811
Totals, 1916-17	3,090,661	415,526
Totals, 1915-16	3,904,715	400,148
Totals, 1914-15	2,422,991	291,421
Totals, 1913-14	6,207,672	598,287
Totals, 1912-13	7,269,465	800,442
Totals, 1911-12	7,398,984	802,897
Totals, 1910-11	7,049,729	723,664
Totals, 1909-10	6,143,610	578,944
Totals, 1908-09	6,143,610	578,944
Totals, 1907-08	4,255,789	449,727
Totals, 1906-07	4,756,621	548,695

EXPORTS OF SCRAP RUBBER BY COUNTRIES.

	Pounds.	Value.
At—		
Massachusetts	2,907	\$1,740
New York	136,414	29,236
San Francisco	787	28
Buffalo	787	106,452
Madison	.....	.....
St. Lawrence	3,294	34,357
Vermont	13,817	24,545
Total	117,451	\$35,811

REEXPORTS OF SCRAP RUBBER.

	Pounds.	Value.
To—		
Canada	74,747	\$16,965
Washington	.....	.....
Totals, 1917-18	74,747	\$16,965
Totals, 1916-17	1,909	215
Totals, 1915-16	5,814	734
Totals, 1914-15	2,383	273
Totals, 1913-14	24,395	2,450
Totals, 1912-13	27,960	10,723
Totals, 1911-12	40,231	28,196
Totals, 1910-11	40,231	43,338
Totals, 1909-10	61,594	5,772
Totals, 1908-09	18,506	1,953
Totals, 1907-08	12,713	2,243
Totals, 1906-07	108,463	9,444

Note.—Totals of exports of domestic merchandise to countries for the fiscal year ended June 30, 1918, were given on pages 167-68 of THE INDIA RUBBER WORLD, December 1, 1918.

SUMMARY.

IMPORTS OF FOREIGN MERCHANDISE.

	1915-16	1916-17	1917-18
Imports of foreign merchandise	1,015,400	1,015,400	1,015,400
India rubber, etc., and substitutes for, and manufactures of:	2,544,405	4,060,106	4,060,106
Latex	2,544,405	4,060,106	4,060,106
China	2,544,405	4,060,106	4,060,106
Belgium	2,544,405	4,060,106	4,060,106
Other countries	2,544,405	4,060,106	4,060,106
India rubber scrap, fit only for manufacture	2,544,405	4,060,106	4,060,106
India rubber scrap, fit only for manufacture	2,544,405	4,060,106	4,060,106
Total imports of foreign merchandise	10,354,387	15,938,696	15,938,696

	1915-16	1916-17	1917-18
Manufactures re-exported
India rubber
Latex
China
Belgium
Other countries
Total manufactures re-exported

REEXPORTS OF FOREIGN MERCHANDISE.

	1915-16	1916-17	1917-18
Re-exports of foreign merchandise	.....	.....	.....
India rubber, etc., and substitutes for, and manufactures of:	667,168	1,180,946	1,180,946
Latex	667,168	1,180,946	1,180,946
China	667,168	1,180,946	1,180,946
Belgium	667,168	1,180,946	1,180,946
Other countries	667,168	1,180,946	1,180,946
India rubber scrap, fit only for manufacture	667,168	1,180,946	1,180,946
India rubber scrap, fit only for manufacture	667,168	1,180,946	1,180,946
Total re-exports of foreign merchandise	5,476,557	8,138,052	8,138,052

	1915-16	1916-17	1917-18
Manufactures re-exported
India rubber
Latex
China
Belgium
Other countries
India rubber scrap, fit only for manufacture
India rubber scrap, fit only for manufacture
Total manufactures re-exported

* Dutiable during 1916-17.

RUBBER STATISTICS FOR THE DOMINION OF CANADA

IMPORTS OF CRUDE AND MANUFACTURED RUBBER.

	1918.		1919.	
	Pounds.	Value.	Pounds.	Value.
UNMANUFACTURED—Free.				
Rubber, gutta percha, etc.:				
From United Kingdom	4,441	\$2,458	2,219	\$1,168
United States	677,798	328,372	207,705	\$1,646
Straits Settlements	265,448	132,330	997,881	\$63,643
Other countries	134,315	102,314	380,062	179,959
Totals	1,082,002	\$565,474	1,588,407	\$863,407
Rubber, recovered	254,186	44,341	181,281	\$5,134
Hard rubber sheets and rods	3,461	2,480	2,109	\$3,611
Rubber, powdered, and rubber of gutta percha scrap	153,793	9,282	467,989	48,254
Rubber thread, not covered	1,094	1,612	2,334	3,474
Rubber substitute	16,065	3,108	185,404	18,946
Totals	428,599	\$60,823	839,117	\$107,719
Balata, crude			7	10
Chicle	158,905	65,184	41,841	29,525
MANUFACTURED—dutiable:				
Boots and shoes			20,633	13,098
Belt, hose and packing			21,258	27,138
Waterproof clothing			24,838	\$3,696
Tires			34,889	165,199
Other manufactures			79,413	165,199
Totals		\$170,831		\$283,398

EXPORTS OF DOMESTIC AND FOREIGN RUBBER GOODS.

	1919.		1918.	
	Produce of Canada.	Reexports of Foreign Goods.	Produce of Canada.	Reexports of Foreign Goods.
MANUFACTURED—				
Hose	\$10,659	\$8,216		
Boots and shoes	25,990	115,574		
Clothing		1,842		
Tires	121,968	634,284	54,379	
Waste	8,069	41,219		
Belt	3,320	765		
All other—n. o. p.	5,380	68,108	333,754	
Totals	\$172,786	\$426,264	\$870,408	\$338,133
Chicle	134,205	71,450		

RUBBER IMPORTS AND EXPORTS FOR BRAZIL—1913 AND 1917.

IMPORTS.

	1913.		1917.	
	Tons.	Value.	Tons.	Value.
MANUFACTURED—				
Boots and shoes				
From United States		\$52,900	20	\$34,000
United Kingdom		2,000		
Germany		5,000		
Other countries		4,000		
Totals		\$63,900	20	\$34,000
Tires and tubes				
From United States	11	\$24,000	324	\$654,000
United Kingdom	39	63,000	34	61,000
Germany	111	161,000		
Other countries	370	498,000	156	203,000
Totals	531	\$746,000	514	\$918,000
Sheets:				
From United States	1	\$2,000	33	\$41,000
United Kingdom	15	18,000	4	6,000
Germany	14	7,000		
Other countries	6	1,000	1	1,000
Totals	26	\$28,000	38	48,000
Hose:				
From United States	31	\$22,000	167	\$94,000
United Kingdom	22	25,000	13	16,000
Germany	49	53,000		
Other countries	4	8,000	5	7,000
Totals	106	\$108,000	125	\$117,000
Solid rubber tires:				
From United States			62	\$55,000
United Kingdom	5	\$6,000	65	\$50,000
Germany	154	117,000		
Other countries	5	6,000	1	1,000
Totals	164	\$129,000	128	\$106,000
Insulated wires:				
From United States	754	\$208,000	389	\$357,000
United Kingdom	37	20,000	1	2,000
Germany	174	84,000		
Other countries	82	23,000	8	8,000
Totals	1,047	\$434,000	398	\$367,000
Electric cables:				
From United States	488	\$163,000	1,036	\$745,000
United Kingdom	1,250	461,000	19	19,000
Germany	580	167,000		
Other countries	260	85,000	150	91,000
Totals	2,578	\$823,000	2,223	\$885,000

	1913.		1917.	
	Tons.	Value.	Tons.	Value.
Other manufactures:				
From United States	44	\$80,000	109	\$34,000
United Kingdom	167	238,000	26	96,000
Germany	129	190,000		
Other countries	7	177,000	43	148,000
Totals	355	\$695,000	178	\$278,000
MANUFACTURED—				
Rubber goods:				
To United States			1	\$2,000
INDIAN MANUFACTURED—				
Indian rubber (liquid):				
To United States	16,507	\$21,805,000	20,165	\$30,674,000
United Kingdom	13,836	20,587,000	10,502	13,759,000
Germany	686	930,000		
Other countries	3,406	5,399,000	522	780,000
Totals	34,435	\$48,721,000	31,589	\$35,113,000
Managadepa				
To United States	17	\$11,000	138	\$99,000
United Kingdom	84	61,000	29	15,000
Germany	85	80,000		
Other countries	40	27,000	147	100,000
Totals	226	\$179,000	314	\$234,000
Manikola				
To United States	283	\$359,000	1,099	\$847,000
United Kingdom	638	667,000	548	\$66,000
Germany	233	231,000		
Other countries	401	356,000	372	251,000
Totals	1,555	\$1,513,000	2,089	\$1,464,000

LONDON AND LIVERPOOL RUBBER STATISTICS.

EXPORTS.

	1918.		1919.	
	Pounds.	Value.	Pounds.	Value.
Waste and reclaimed rubber:				
From London:				
To Belgium		4,500	£187	
France		83,100	2,173	
Spain		265,000	4,512	
United States (Atlantic)		83,100	1,355	
New South Wales		4,300	179	
Totals	650,600	\$13,478	340,000	\$8,406
From Liverpool:				
To Belgium		39,400	1,646	
France		44,800	1,960	
Italy		160,800	5,025	
Japan		15,800	687	
United States (Atlantic)		9,400	137	
Canada		6,800	152	
Totals	136,300	\$4,454	277,000	\$9,607
From Dover to France			600	20
From Manchester:				
To France		38,800	1,166	
United States		34,300	435	
Totals			73,100	£1,601

The imports for March were printed on page 464 of the INDIA RUBBER WORLD, May 1, 1918.

THE MARKET FOR RUBBER SCRAP.

NEW YORK.

THE anticipations of the dealers, noted a month ago, that the scrap rubber trade would soon develop signs of improvement, have not been realized. Conditions are practically stagnant as regards the demand for scrap by the reclaimers, who decline to buy except for actual needs and are not paying the prices demanded except for shoes. The dullness of crude rubber apparently has more influence on the scrap market than has the supply of scrap. Some dealers are turning to the business of selecting repairable tires for selling to tire rebuilding plants and pulling tire fabric for the repair trade.

BOOTS AND SHOES. The movement has been very slow. Prices have held firm.

INNER TUBES. The market has been practically inactive.

MECHANICALS. Very little demand. Prices nominal.

TIRES. The demand is very slight, at about 4 cents.

QUOTATIONS FOR CARLOAD LOTS DELIVERED.

MAY 24, 1919.

Prices subject to change without notice.

BOOTS AND SHOES				
Artic parts	lb.	0.11 1/2	@	0.15 1/2
Boots and shoes	lb.	0.73 1/2	@	.08
Trimmed artic	lb.	0.60	@	.08 1/2
Untrimmed artic	lb.	0.51 1/2	@	0.53 1/2

HARD RUBBER:

Battery jars, black compounded.....	lb.	01	01
No. 1, bright fracture.....	lb.	24	25

INNER TUBES:

No. 1, odd packing.....	lb.	9	21
No. 2, new packing.....	lb.	24	25
No. 2, air brake.....	lb.	10 1/2	10 1/2
Red.....	lb.	10 1/2	10 1/2

MECHANICALS:

Black scrap, mixed, No. 1.....	lb.	04	04
Car springs.....	lb.	04	04 1/2
Heels.....	lb.	03 1/2	03 1/2
Horseshoe pads.....	lb.	03 1/2	04
Hose, air brake.....	lb.	04 1/2	04 1/2
fire, cotton lined.....	lb.	01 1/2	02
garden.....	lb.	01 1/2	01 1/2
Insulated wire stripping, free from fiber.....	lb.	03 1/2	04
Matting.....	lb.	03 1/2	04
Packing.....	lb.	01 1/2	02
Red scrap, No. 1.....	lb.	01 1/2	02
No. 2.....	lb.	09 1/2	10
White scrap, No. 1.....	lb.	06 1/2	07
No. 2.....	lb.	09 1/2	09 1/2

TIRES, PNEUMATIC:

PNEUMATIC:			
Auto peelings, No. 1.....	lb.	9 1/2	10 1/2
No. 2.....	lb.	0	0
Bicycle.....	lb.	04 1/2	04 1/2
Standard white auto.....	lb.	05 1/2	05 1/2
Standard mixed auto.....	lb.	04	04
Stripped, unguaranteed.....	lb.	03 1/2	03 1/2
White, G. & G., M. & W., and U. S.....	lb.	05 1/2	05 1/2
SOLID:			
Carriage.....	lb.	04 1/2	04 1/2
Irony.....	lb.	01 1/2	01 1/2
Truck.....	lb.	04 1/2	04 1/2

THE MARKET FOR COTTON AND OTHER FABRICS.
NEW YORK.

THE American staple market has been quite active and prices have advanced, due to a general demand both here and abroad. On April 17, middling spot was 28.65 cents and July deliveries, 25.80 cents. May 20, the spot quotation was 31.75 cents and July deliveries, 29.68 cents. These figures show an approximate advance in future cotton of \$20 a bale.

Tentative estimates point to a reduction of 11.2 per cent in this year's cotton acreage. Rains and cool weather have prevented planting and plowing, and labor is scarce, hence the season is about 10 days late. The prospects, however, are better than a year ago and unless heavy replanting becomes necessary, a good yield seems assured.

Egyptian prices are unchanged. It is reported that the Cotton Control Commission in Egypt will go out of existence on July 31. It is also understood that trading in Egyptian futures will be resumed in Liverpool beginning June 2. Present quotations are 50 cents c. i. f. Boston for a medium grade of Sakel and 45 cents c. i. f. Boston for a medium grade of uppers.

SEA ISLAND COTTON.—John Malloch & Co. report a better demand during the month and prices have advanced. Prices are very strong, 57 cents being quoted for average extra choice. There is not a great deal of desirable cotton left in the South and such as there is appears to be in very strong hands. The outlook for the present crop as regards acreage is a little better than was anticipated a month ago and should everything go well

the crop would make about 50,000 rather than 30,000, which was the earliest estimate. However, to offset the increased acreage, there are reports of weevil which is very unusual at this early stage of the crop. If these reports are true, it is doubtful if 50,000 bales or anywhere near it can be made.

COTTON FABRICS.—The general demand has been good in all lines and prices have been substantially advanced. The mills are confronted with increasing cost of raw materials and labor is high and scarce, all of which accounts for the inclination on the part of cotton goods manufacturers to withdraw from the market.

NEW YORK QUOTATIONS.

MAY 24, 1919.

Prices subject to change without notice

ASBESTOS CLOTH:

Brake lining, 2 1/2 lbs. sq. yd., brass or copper insertion.....	lb.	85	85
2 1/2 lbs. sq. yd., brass or copper insertion.....	lb.	90	90

BURLAPS:

32-7-ounce.....	100-yards	6	6
32-8-ounce.....	100-yards	10 1/2	10 1/2
40-7-ounce.....	100-yards	10 1/2	10 1/2
40-8-ounce.....	100-yards	11 1/2	11 1/2
40-10-ounce.....	100-yards	10 1/2	10 1/2
40-10 1/2-ounce.....	100-yards	10 1/2	10 1/2
45-8-ounce.....	100-yards	10 1/2	10 1/2
45-9 1/2-ounce.....	100-yards	10 1/2	10 1/2
48-10-ounce.....	100-yards	15 1/2	15 1/2

DRILLS:

38-inch 2.00-yard.....	yard	29	29
40-inch 2.47-yard.....	yard	23 1/2	23 1/2
52-inch 1.90-yard.....	yard	32 1/2	32 1/2
52-inch 1.95-yard.....	yard	31 1/2	31 1/2
60-inch 1.52-yard.....	yard	40 1/2	40 1/2

DUCK:**CARRIAGE CLOTH:**

38-inch 2.00-yard enameling duck.....	yard	29	29
38-inch 1.74-yard.....	yard	32 1/2	32 1/2
72-inch 1.66-ounce.....	yard	60 1/2	60 1/2
72-inch 1.71-ounce.....	yard	62 1/2	62 1/2

MECHANICAL:

Hose.....	found	*62 1/2	@
40-inch, 10 ounce.....	found	*64 1/2	@
Belt.....	found	*62 1/2	@

HOLLANDS, 40-INCH:

Acme.....	yard	23	@
Endurance.....	yard	27 1/2	@
Penn.....	yard	30	@

OSNABURGS:

40-inch 2.35-yard.....	yard	24 1/2	@
40-inch 2.48-yard.....	yard	23	@
37 1/2-inch 2.42-yard.....	yard	23 1/2	@

RAINCOAT FABRICS:**COTTON:**

Bombazine 64 x 60 water-repellent.....	yard	17	@
60 x 48 not water-repellent.....	yard	16	@
Cashmeres, cotton and wool, 36-inch, tan.....	yard	77 1/2	@
cotton, blue and black.....	yard	70	@
Oxford.....	yard	75	@
Twills 64 x 72.....	yard	30	@ 32 1/2
64 x 102.....	yard	35	@ 40
Twill, mercerized, 36-inch, tan and olive.....	yard	32 1/2	@
blue and black.....	yard	34 1/2	@
printed.....	yard	55	@ 72
printed.....	yard	16	@ 22

AVERAGE POUND PRICES FOR EGYPTIAN AND SEA ISLAND TIRE-BUILDING FABRICS, 1913 TO 1918.

17 1/2 Ounce Combed	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
Sea Island:												
1913.....	66	59	58	56 1/2	54 1/2	54	54	54	54	48 1/2	46 1/2	51
1914.....	55	53 1/2	54 1/2	54 1/2	54 1/2	54	54	54	54	48 1/2	46 1/2	47 1/2
1915.....	49	49	49 1/2	53	59 1/2	59 1/2	59 1/2	56 1/2	54 1/2	63	61 1/2	64
1916.....	...	1.06	1.09	...	...	...	...	...	1.50	1.48	1.56	1.56
1917.....	...	1.60	1.60	...	...	...	1.60	...	...	1.77	...	...
1918.....	...	...	...	...	...	...	...	...	...	...	...	...
17 1/2 Ounce Carded												
Egyptian:												
1913.....	50 1/2	50	49 1/2	45	49 1/2	49	49 1/2	49 1/2	48 1/2	49	48 1/2	47 1/2
1914.....	47	47 1/2	46 1/2	47	45 1/2	44 1/2	45 1/2	45 1/2	45 1/2	44 1/2	43 1/2	43 1/2
1915.....	38	37 1/2	37 1/2	41 1/2	42 1/2	42 1/2	42 1/2	42 1/2	41 1/2	41 1/2	41 1/2	41 1/2
1916.....	...	58	...	...	...	...	58	...	...	...	75	84
1917.....	...	86	89	...	...	...	...	...	...	...	1.15	...
1918.....	...	1.30	...	1.34	...	...	1.37	...	...	...	...	...

Black, 60 x 48.....	1.00	@
Repp, 56 x 44.....	1.38	@ .45
Surface print 60 x 48.....	1.22	@
64 x 60.....	1.18	@

IMPORTED WOOLLEN FABRICS SPECIALLY PREPARED FOR RUBBERIZING —PLAIN AND FANCIES.

25-inch, 37 to 77 ounces.....	1.15	@ 3.15
36-inch, 25 to 5 ounces.....	.70	@ 1.80

IMPORTED PLAIN LINING (WOOL AND COTTON)

25-inch, 2 to 4 ounces.....	.85	@ 1.75
36-inch, 2 to 4 ounces.....	.50	@ 1.00

DOMESTIC WORSTED FABRICS:

25-inch, 47 to 8 ounces.....	.55	@ 1.15
------------------------------	-----	--------

DOMESTIC WOVEN PLAID LININGS (COTTON):

36-inch, 3 1/2 to 5 ounces.....	.17	@ .30
---------------------------------	-----	-------

SHEETINGS:

JACKET:

25-inch, 2 to 4 ounces.....	.23	@
36-inch, 2 to 4 ounces.....	.26	@

SILKS:

Cotton, 25-inch.....	.40	@
Schappe, 36-inch.....	.55	@

TIRE FABRICS:

27 1/2-ounce, 2 to 4 inches, combined.....	1.15	@
17 1/2-ounce Egyptian, combed.....	1.25	@
17 1/2-ounce Egyptian, carded.....	1.20	@
20-ounce Egyptian, combined.....	.15	@
17 1/2-ounce Egyptian, carded.....	.85	@

*Nominal.

THE MARKET FOR CHEMICALS AND COMPOUND INGREDIENTS.

NEW YORK.

THE MARKETS for the base metals, pig lead and spelter, have been very dull for the most part during the past month. A considerable decline in values took place in both pig lead and spelter, the prices regaining firmness and an upward tendency toward the middle of May.

ANILINE. There was a good volume of trade early in the month followed by lessened demand and a tendency to lower the price, which reached 21 cents per gallon.

DRY COLORS. The market for dry colors remains dull and prices unchanged. Manufacturers are optimistic, however, looking for improved demand.

BARYTES. The demand showed some improvement followed by steady domestic and good export demand. The price remained practically fixed.

BENZOL. The demand throughout the past month has been good at about 22 cents per gallon.

CARBON TETRACHLORIDE. The demand has been small and prices weak, falling to 12 cents per pound.

LITHOPONE. The month's business has been satisfactory with continuing good demand. The price holding steady at 6 1/2 cents for carload lots.

LITHARGE AND SUBLIMED LEAD. There has been no change in prices, and none is anticipated till the usual mid-year revision.

WHITING. There has been a good demand, with no scarcity of material, at a steady price level.

ZINC OXIDE. The demand has been active the entire month. Prices remain unchanged and are likely to remain so until the end of the quarter.

NEW YORK QUOTATIONS.

MAY 24, 1919.

Prices subject to change without notice.

ACCELERATORS, ORGANIC.

Accelerator "N".....	.30	@
Accelerator.....	3.70	@
Accelamal.....	.55	@
Aldehyde ammonia crystals.....	1.00	@ 1.5
Aniline oil.....	.23	@
Excellerex.....	.85	@
Hexamethylenetetramine (ammonia).....	.23	@ 1.10
Paraphenylenediamine.....	3.50	@
Tensolite.....	.50	@
Thioacetamide.....	.50	@ .60
Velocite.....	.60	@

ACCELERATORS, INORGANIC.

Lead, dry red (bbis).....	.10 1/2	@
sublimed blue (bbis).....	.08 1/2	@
sublimed white (bbis).....	.08 1/2	@
white, basic carbonate (bbis).....	.09	@
Lead, plate.....	.27	@
lime, flour.....	.02	@ .02 1/2
Litharge, domestic.....	.09 1/2	@
imported.....	.14	@ .15
sublimed.....	.09 1/2	@
Magnesium, carbonate.....	.11 1/2	@
calcined heavy (Thistle).....	.35	@
light (Manhattan).....	.11	@
Magnesium oxide.....	.12	@
Manganese.....	.14	@

ACIDS.

Acetic, 28 per cent (bbis).....	3.25	@
Cresylic (97% straw color).....	1.02	@ 1.07
(95% dark).....	.92	@ .97
Chloral, 50 per cent (carbonyl).....	1.50	@
Muriatic, 20 degrees.....	1.60	@ 1.90
Nitric, 36 degrees.....	6.10	@
Sulphuric, 66 degrees.....	2.00	@

ALKALIES.

Caustic soda, 76 per cent (bbis).....	.03 1/2	@ .03 1/2
Soda ash (bbis).....	.03 1/2	@ .03

COLORS.

Blacks:		
Bone, powdered.....	.05	@
granulated.....	.09	@
Carbon, black (sacks, factory).....	.15	@ .25
Drop.....	.05 1/2	@ .15
Ivory black.....	.16	@ .30
Lampblack.....	.15	@ .45
Oil soluble aniline.....	.40	@
Rubber black.....	.05	@

TIRE FABRICS

JENCKES SPINNING COMPANY

PAWTUCKET RHODE ISLAND

Blue:

Cobalt	lb.	.25	@	30
Prussian	lb.	.70	@	80
Ultramarine	lb.	.18	@	40

Brown:

Iron oxide	lb.	.04	@	
Sienna, Indian, raw and burnt	lb.	.07	@	15
Spanish	lb.	.04	@	05
Timber, Turkey, raw and burnt	lb.	.06	@	05
Vandyke	lb.	.02	@	03 1/2

Green:

Chrome, light	lb.	.35	@	40
medium	lb.	.40	@	50
dark	lb.	.50	@	60
commercial	lb.	.08	@	15
Oxide of chromium (casks)	lb.	.67	@	

Red:

Antimony, crimson, sulphuret (casks)	lb.	.50	@	
crimson, "Mephisto" (casks)	lb.	.55	@	
Antimony, golden sulphuret (casks)	lb.	.25	@	
golden, "Mephisto" (casks)	lb.	.28	@	
golden sulphuret (States)	lb.	.28	@	
red sulphuret (States)	lb.	.25	@	
vermillion sulphuret	lb.	.55	@	
Arsenic, red sulphide	lb.	.75	@	
Indian, pure bright	lb.	.08	@	
Toulidine topor	lb.	.35	@	
Iron oxide, reduced grades	lb.	.12	@	
pure bright	lb.	.16	@	
Oil soluble aniline, red	lb.	1.80	@	
orange	lb.	.50	@	
Oximony	lb.	.18	@	
Venetian	lb.	0.2	@	04 1/2
Vermillion, English, pale, medium, dark	lb.	1.25	@	

White:

Aluminum bronze, C. P. (cases)	lb.	.58	@	
superior	lb.	.61	@	
Lithopane, domestic	lb.	.06 1/2	@	66 1/2
Forolith (carloads, factory)	ton	1.00	@	
Rubber-makers' white	lb.	.04 1/2	@	66 1/2
Zinc oxide, Horsehead (less carload, factory)	lb.	.09	@	
"XX" red	lb.	.09	@	
French process, red seal	lb.	.11	@	
green seal	lb.	.11	@	
white seal	lb.	.09	@	
Azo, ZZ, lead free (less carload factory)	ton	.09 1/2	@	
ZZ, under 5% leaded (less carload factory)	ton	.08 1/2	@	
Z, 8-10% leaded (less carload factory)	lb.	.08 1/2	@	
Zinc sulphide	lb.	.05 1/2	@	66 1/2

Yellow:

Cadmium, sulphide, yellow, light, orange	lb.	2.00	@	
red	lb.	1.85	@	
Chrome, light and medium	lb.	.26	@	28
Ocher, domestic	lb.	.05	@	06
imported	lb.	.05	@	06
Oil soluble aniline	lb.	1.20	@	
Zinc chromate	lb.	.60	@	

COMPOUNDING INGREDIENTS.

Aluminum flake (bbls factory)	ton	26.00	@	28.00
Aluminum oxide (casks factory)	ton	23.75	@	25.00
Ammonia carbonate, powdered	lb.	.14	@	14 1/2
Asbestos (casks)	ton	35.00	@	40
Asbestos (bags)	ton	35.00	@	40
Avonol compound	lb.	1	@	
Barium carbonate, precipitated	ton	5.00	@	
Barium sulphide, precipitated	lb.	.06 1/2	@	
Barytes, pure white	ton	32.00	@	35.00
oil soluble	ton	33.00	@	35.00
uniform floated	lb.	.03 1/2	@	
Basofer	lb.	.06	@	
Blanc fixe	lb.	.05	@	.05 1/2
Bone ash	lb.	.04	@	.04 1/2
Chalk, precipitated, extra light	lb.	.05	@	
precipitated, heavy	lb.	.05	@	
China clay, domestic	lb.	.19	@	.23
imported	lb.	.19	@	.23
Cork flour	ton	.62 1/2	@	
Cotton linters, clean mill run, f. o. b. factory	ton	60.00	@	
Fossil flour (powdered)	ton	65.00	@	
(baled)	ton	65.00	@	
(bale)	ton	65.00	@	
Glue, high grade	lb.	.45	@	.40
medium	lb.	.30	@	.25
low grade	lb.	.20	@	.15
Graphite, flake (400-pound bbl.)	lb.	.10	@	.25
amorphous	lb.	.53	@	.05
Ground glass FF (bbls)	lb.	.03	@	
Infusorial earth (powdered)	ton	6.00	@	
(baled)	ton	65.00	@	
Mica, powdered	ton	65.00	@	
Pumice stone, powdered (bbl.)	lb.	.03	@	.08
Pumice stone, powdered (bbl.)	lb.	.03	@	.08
Rotten stone, powdered	lb.	.03	@	.08
Rub-R-Glu	lb.	.03	@	.25
Siles (salica)	ton	10	@	10.00
Soapstone, powdered, domestic	ton	10	@	10.00
Starch, powdered corn (carload, bbls)	cwt.	7.74	@	
(carload, bags)	cwt.	20.00	@	40.00
Talc, American	lb.	.01	@	
Tripoli earth, powdered	lb.	.01	@	
Tyre-lith	ton	5	@	

Whiting, Atlas (carloads)	ton	1.25	@	20
commercial	ton	1.25	@	20
gilders	ton	1.50	@	175
Paris, white, American	ton	1.50	@	175
English clifstone	ton	0.15	@	
Wood flour, imported	ton	0.15	@	
Wood flour, American	ton	0.15	@	

MINERAL RUBBER.

Gilsonite	ton	55.00	@	
Genasore (carloads factory)	ton	57.00	@	
M. R.	ton	65.00	@	
M. R. X	ton	100.00	@	
Liquid rubber	lb.	50.00	@	
Pioneer, carload, factory	ton	50.00	@	
less carload, factory	ton	50.00	@	
Richmond	ton	45.00	@	
No. 64	ton	50.00	@	55.00
318/320 M. P. hydrocarbon	ton	175.00	@	
Refined Flatetite	ton	50.00	@	
Reven M. R.	ton	50.00	@	
Rubron (carloads, factory)	ton	40.00	@	
Walpole rubber flux (factory)	lb.		@	

OILS.

Caster, No. 1, U. S. P.	lb.	.25	@	
No. 3, U. S. P.	lb.	.25	@	
Corn, crude (bbls)	lb.	.15	@	
refined Argo	lb.	.15	@	
Cotton	lb.	.15	@	
Glycerine (98 per cent)	lb.	.15	@	
Glycerine	lb.	.15	@	
Linseed, raw (carloads)	gal.	1.50	@	
lissed compound	gal.	1.50	@	
Palm (Niger)	lb.	.15	@	
Peanut	lb.	.15	@	
Petroleum	lb.	.15	@	
Petroleum grease	lb.	.15	@	
Pine, steam distilled	lb.	1.50	@	
Rapeseed, refined	gal.	1.50	@	
blown	gal.	1.50	@	
Rosin	lb.	.15	@	
Soya bean	lb.	.15	@	
Tar	lb.	.15	@	

RESINS AND PITCHES.

Castella gum	lb.	.15	@	
Tar, retort	lb.	.15	@	
ky	lb.	.15	@	
Pitch, Burgundy	lb.	.15	@	
col tar	lb.	.15	@	
pine tar	lb.	.15	@	
Resin, Pontinak, refined	lb.	None	@	
granulated	lb.	None	@	
fused	lb.	None	@	
Resin, N	lb.	None	@	
powdered	lb.	None	@	
Shellac, fine orange	lb.	None	@	
Tar, kils	lb.	None	@	
retort	lb.	None	@	

SOLVENTS.

Acetone (98.99 per cent drums)	ton	18	@	
methyl (drums)	ton	18	@	
Benzol, water white	ton	27	@	
Beta-naphthol, resublime	ton	27	@	
Carbolic bisulphide (drums)	ton	27	@	
tetrachloride (drums)	ton	27	@	
Naphtha, motor gasoline (steel bbls)	gal.	24 1/2	@	
73 @ 76 degrees (steel bbls)	gal.	24 1/2	@	
68 @ 70 degrees (steel bbls)	gal.	24 1/2	@	
Solvent	gal.	20	@	
V. M. & P. (steel bbls)	gal.	20	@	
Toluol, pure	gal.	24 1/2	@	
Turpentine, spirits	gal.	21	@	
wood	gal.	21	@	
Osmaco rubber	gal.	21	@	
Xelol, pure	gal.	40	@	45
commercial	gal.	40	@	45

SUBSTITUTES.

Black	lb.	.15	@	
White	lb.	.15	@	.23
Brown	lb.	.15	@	.23
Brown facie	lb.	.15	@	.23
White facie	lb.	.15	@	.23
Paragol soft and medium (carloads)	ton	17.00	@	
hard	ton	17.00	@	

VULCANIZING INGREDIENTS.

Lead, black hyposulphite (bbls)	lb.	.15	@	
mercuric, domestic	lb.	.15	@	
Sulphur, chloride (drums)	ton	14	@	
Sulphur, flour, Brooklyn brand (carloads)	ton	14	@	
superfine (carloads, factory)	ton	14	@	

(See also Colors—Antimony)

WAXES.

beeswax, white	lb.	.15	@	
yellow	lb.	.15	@	
carnauba	lb.	.15	@	
ozokerite, black	lb.	.15	@	
green	lb.	.15	@	
Paraffin, sulphuric	lb.	.15	@	
paraffine, refined 118/120 m. p. (cases)	lb.	.15	@	
128/130 m. p. (cases)	lb.	.15	@	

*Nominal



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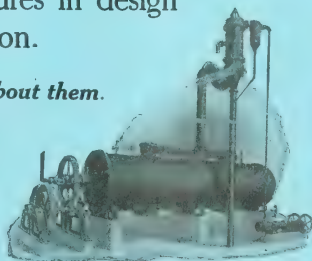


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TABLE OF CONTENTS ON LAST PAGE OF READING.**TRADE ASSOCIATIONS AND COMPETITION.**

THE BUSINESS MAN patiently and patriotically submitted throughout the war while the conduct of his business was taken from him through government control of raw materials, fuel, transportation, distribution, prices and capital. The war is ended and business and industry need free rein, not gradually but immediately.

Franklin D. Jones, counsellor-at-law at Washington, points out in an address to the American Academy of Political and Social Science of Philadelphia, that it is vitally to the interest of industry that competition, free, fair and unrestricted, be reestablished. "Just as the trade associations, through their war service committees," he says, "rendered invaluable service to the Government and their industries during the period of government control, so now they can become a great and constructive factor in the maintenance of competition."

He points out that one of the great faults of the trade association in the past was that it concerned itself largely with control of prices, curtailment of pro-

duction and division of territory, but that its action too often was dictated by desperation of its members over conditions which threatened the ruin of the industry. Mr. Jones declares it is beyond dispute that American industry must now direct its efforts toward securing the greatest possible efficiency in production, and distribution because considerations of world competition as well as domestic conditions demand it.

The facing of mass competition in foreign trade, the fight of industrial interests of one nation against another must be met. Against these Mr. Jones insists that American industry must present a united front and that an association of associations in the United States such as the Hansabund of Germany and the Union of the Metallurgical and Mining Industries of France should be considered. "A similar organization in America founded on right principles and having behind it the unlimited resources and resourcefulness of American industries could become a great constructive force in national and international affairs," he says in conclusion. "In the absence of international regulation of international trade, it is a national necessity."

TO PROTECT AMERICAN RIGHTS IN MEXICO.

BECAUSE of the chaotic conditions that have existed in Mexico during the past eight years with such disastrous effect upon lives and property in that country, there has been organized in the United States the National Association for the Protection of American Rights in Mexico, with headquarters in New York City. Its purposes are to make a coordinated effort to prevent repetition of the gross injustices that have been committed in that country, and to assist in removing the causes of friction between the United States and Mexico.

Further development of Mexico's resources, with increased revenue to the Government, reestablishment of its credit, employment for its people, and an assured food supply are largely dependent upon the continued help of American capital and enterprise, neither of which will be available for this purpose until there is an effective, practical and friendly recognition by the Mexican Government of its obligation to protect American and other foreign rights.

To this end the Association will keep accurate records of conditions in Mexico, will collect data regarding foreign industries there and keep informed concerning all decrees, laws, and regulations affecting American rights, in order to be prepared at all times to take and prosecute vigorously such legitimate steps as may be necessary for their protection. A study of the situation from the historical, legal, and economic standpoints will also be made in order to furnish accurate information to the United States Government and to American industry.

Nation-wide membership is essential and hundreds of leading firms from coast to coast, including several rub-

ber companies, have joined. Active membership includes corporations, associations, partnerships or individuals who have active or inactive property or business interests in Mexico. All others in sympathy with the purposes of the association are eligible as associate members.

WORKS COMMITTEES AND THE LIKE.

THAT there is a revolution on in the labor world none will deny. That it is likely to be a peaceful one, at least in America, is also more than probable. The fact that except for strikes, warranted and otherwise, labor is getting what it asks for without violence is largely due to the broad views held by industrial leaders who for the past few years have in every way possible given to the workman comforts, privileges and care that a generation ago would have been deemed foolish and superfluous. In other words, the heads of companies besides their loyalty to their business are showing a friendship, a loyalty to labor that is as complete as it is sincere.

The response of the workman to this attitude is what will determine the future relations between employer and employes. If the worker cares nothing for his work, his company, his "boss"; if he is ever ready in fault-finding, in unfair demands; is suspicious; is indeed a slacker, the relation will be no better than before, indeed, will be worse.

Loyalty to the workman calls for loyalty from the workmen, and until it is shown there can be no real industrial progress.

A SOUND PLAN OF PATENT REFORM.

IT has often been asserted that the failure of Congress to provide adequate forces and facilities for granting patents that really protect is due to the fact that the situation has not been particularly brought to its attention. If that be true, something may perhaps be accomplished if the inventors, manufacturers, and others who have suffered under our present patent system will make known to their representatives in both branches of Congress that they approve the movement to remedy conditions which is being conducted by the Patent Committee of the National Research Council, and which has the endorsement of the Patent Office Society. The committee is composed of some of the leading inventors, scientists, engineers and patent attorneys of the country and its recommendations are entitled to full acceptance and general support.

The Patent Committee proposes the following program of four features believed to be of fundamental importance: (1) the establishment of a single Court of Patent Appeals to take over the appellate jurisdiction now lodged in the nine independent Circuit Courts of

Appeal; (2) the establishment of the Patent Office as a separate institution independent of the Department of the Interior; (3) an increase in the personnel of the Patent Office to enable it to render prompt and efficient service and an increase in the salaries to approximate those paid in outside patent work, so that qualified examiners may be kept in the public service; (4) a change in the law relating to damages in infringement suits to answer one of the most common and strongest reproaches against the patent system, namely, that a patent does not ordinarily pay the inventor any money.

Apparently the passage of this legislation would go a long way toward eliminating the evils of our patent system, tending to facilitate prompt determination of patent rights and to avoid unnecessary litigation. Patentees of rubber articles, processes, and machinery have frequently resorted to the courts at great expense to protect their rights and will doubtless be numbered among the staunch supporters of the proposed legislation.

A MASSACHUSETTS MANDATORY.

A BILL that will doubtless be passed by the Legislature of Massachusetts points the way toward Americanization in a manner wholly wise and most comprehensive. It relates to the employment of persons unable to speak or write English in the factories and larger mercantile houses. It provides that after January 1, 1921, such persons between the ages of 21 and 40, whose education does not equal the fourth grade in the grammar school shall not be permitted in any place where more than 25 persons are employed. There is the further provision that three hours a week of schooling for at least 40 weeks in the year in approved schools, shall make such persons eligible for employment. Other states please copy.

EXPANSION OF BUSINESS.

TO STIMULATE investment of private capital in foreign securities in order to cut down government loans to allied countries as soon as possible the United States Government is preparing to furnish investors with information concerning the stability of foreign corporations and their stocks and bonds. The movement is designed to give an impetus to our foreign commerce as well as to help other countries and as such is worthy of commendation. Information concerning credit conditions in other countries will be placed at the disposal of prospective purchasers of foreign securities by the Department of Commerce at Washington. Business men desirous of expanding their business will do well to take advantage of this opportunity.



SEA VIEW GOLF CLUB, ABSECON, NEW JERSEY.

Summer Outing of The Rubber Association of America.

GOLFELLOWSHIP reigned supreme, business was forgotten and competitors affiliated, when 300 or more members of the rubber industry gathered for a day's sport and recreation at the Summer outing of The Rubber Association of America, Inc., that was held at Sea View Golf Club, Absecon, New Jersey, Tuesday, June 24, 1919.

It was 1916 when the last outing was held. While our nation was plunged in warfare there was neither the time nor the inclination for such recreation, but with the armistice in force and the treaty which will insure peace to be signed in a few days at the most, the return to the good old custom seemed proper, and a goodly renaissance it was. New York rubber men were out in force. So were Trenton and Philadelphia. New England was well represented, and so were Akron, Cleveland and the Middle West. The day was perfect,

the sky almost cloudless, and the salt sea breeze tempered the sun's fervid heat.

The Sea View Golf Club House is an imposing structure, ideal in many respects. It has all the appurtenances of a first-class country club, and then some. There are golf-links, shooting-grounds,

tennis courts and ball field, also a swimming pool, and all these were reserved for the guests and were well utilized.

The New York contingent, reinforced with detachments from New England, embarked from the Pennsylvania Station on a special train of



INDUSTRIES.

THE TWO BALL TEAMS.

IMPORTERS.

Pullmans, and at Newark and Trenton large representations were added. Arriving at Absecon about 11 o'clock, automobiles and busses conveyed the company to the club-house, where luncheon was served. Then the company separated into groups, each to participate in sports in which he was interested,



GOLF FOURSOMES.

G. E. HALL, H. C. PEARSON, G. B. HODGMAN, F. H. JONES.

H. B. TUBIN, A. B. CORNELL, C. E. STOKES, E. B. FULPER.

and so the afternoon was spent, in tennis, base-ball, golf, trap-shooting, swimming, etc.

A surprise of the day was the arrival of a Curtiss biplane, which, after doing a variety of stunts over the field in front of the clubhouse, alighted there, and was immediately surrounded by a curious crowd, anxious to get a near view of the air conqueror. Then it was discovered that H. H. Durr, president of the Victor Rubber Co., Springfield, Ohio, had taken this novel means of reaching the club grounds. He was hailed with enthusiastic cheers. Edward L. Bullock thought he would like to take a little flight in the azure, and when he had taken the trip, been tipped on end at the sharp turns, and upside down in the loop-the-loops, and came down safely and enthusiastically, a dozen others followed his lead, much to the monetary emolument of the owners and pilots of the machine. Without an exception, these 12 or 15 men were loud in praise of the trip. It was late in the

afternoon when the sports were finished. In fact, the day was hardly long enough for the elaborate program of the sports committee.

THE BASEBALL GAME.

The baseball game, in charge of P. C. Botzenmayer, was between a picked nine from the Rubber Industries Athletic

League, and a nine chosen from the rubber importers and dealers. Five innings were played, with here and there a brilliant play, even though the field was under a somewhat grilling sun. The umpire, Jack Klinow, formerly with the New York "Yankees," judged with the utmost fairness, and no rebellion followed any of his decisions. The score was: Industries, 6; Importers, 3.

TENNIS.

Singles. The first prize was won by S. H. Johnson, and the second prize by T. R. Shepard, both of New York City.

Doubles. The winning team of doubles was David Kubie and Roger Hardy, both of New York City.

THE BANQUET.

And then the banquet. The big glassed-in piazza was filled

THE TENNIS COURT.

Although the recently elected president, Homer E. Sawyer, and the new manager-secretary, A. L. Viles, who takes office July 1, were present, there were no speeches, and the only formality was the award of prizes by F. R. Henderson, chairman of the Sports Committee. The prizes were mostly of silver, and com-

ARRIVAL OF THE AIRPLANE.

prised cups, hummocks, table sets, and a fine revolver. The successful winners were as follows:

GOLF.

First prize, low gross, Horace Cook, Trenton, New Jersey.

Second prize, low gross, John W. Herron, Akron, Ohio.

First prize, low net, E. H. Sprague, Omaha, Nebraska.

Second prize, low net, Walter Bass, Akron, Ohio.

The Inter-City contest for the Trophy Cup presented by the Trenton Rubber Manufacturers' Association, which must be won



THE PRIZE MARKSMEN.



MEMBERS AND GUESTS OF THE RUBBER ASSOCIATION OF AMERICA, INC.

three times to become the permanent property of the territorial division was won this year by Akron, with a score of 314, New York scoring 319, Trenton 320, and Boston 322. This cup was won first by Trenton, second by New York, and now by Akron, and Chairman Henderson stated that it was Boston's turn next to win.

The banquet ended as it had begun, informally and soon the guests were being transported to the station where a special train, started at 9:40 for New York City, carrying most of the party,

though quite a number decided to remain over night at the Club House, or to go to Atlantic City.

That the affair was a perfect success was due to the efficient work of the committee in charge of F. R. Henderson, L. P. MacMichael and A. A. Garthwaite. The sub-committees were: B. W. Henderson, trap-shooting; H. W. French, tennis; and J. W. Herron, golf. All of these gentlemen devoted their entire day to catering to the enjoyment of the members, and strenuously earned the thanks accorded them.

Activities of The Rubber Association of America, Inc.

REGULATIONS ON RUBBER CEMENT EXPRESS SHIPMENTS MODIFIED.

THROUGH THE EFFORTS of the Traffic Division, an order has been promulgated by the Interstate Commerce Commission, effective July 10, 1919, which will permit liquid cements, including leather cement, roofing cement, rubber cement, and liquid cement not otherwise specified, to be transported by express in containers of a capacity not greater than five gallons when the flash point of the liquid is below 80 degrees F. and above 20 degrees F. The present regulation limiting the maximum quantity in one outer container to not exceeding one gallon when the flash point is below 20 degrees F. is still to be enforced.

SUPPLEMENTAL FEDERAL EXCISE TAX RULINGS ON MANUFACTURERS' SALES OF TIRES, INNER TUBES, PARTS, AND ACCESSORIES.

The form of certificate embodied in Treasury Decision 2852 (approved May 31, 1919) has been amended to read as follows:

FORM OF CERTIFICATE.

The undersigned hereby certifies that the tires, inner tubes, parts, or accessories purchased hereunder are purchased with the intention of using them in the manufacture or production of new automobile trucks, automobile wagons, other automobiles, motorcycles, tires, inner tubes, parts or accessories, or for the sale on new automobile trucks, automobile wagons, other automobiles or motorcycles, or in connection therewith or with the sale thereof, or for free replacement under contract or guaranty. In case all of the tires, inner tubes, parts or accessories sold hereunder are diverted from this use, the purchaser will account for such tires, inner tubes or accessories to _____, the manufacturer thereof, at least once during each calendar year and will pay the tax to him at the time such accounting is made.

(Signed) _____

PROOF OF EXPORTATION.

The Treasury Department has officially approved the form of proof of exportation marked Exhibit A, to meet the requirements of Article 43 of Regulations No. 47. The form marked Exhibit B is suggested for general use, as it may be used either

(a) where the manufacturer himself is the exporter or (b) where the exporter is a direct purchaser from the manufacturer. These forms may be obtained from the secretary of the Rubber Association.

PRESIDENT WILSON ADVOCATES REPEAL OF FEDERAL EXCISE TAXES ON SALES OF TIRES, INNER TUBES, PARTS AND ACCESSORIES AND OTHER EXCISE TAXES.

The following is quoted from President Wilson's message to Congress on Tuesday, May 20, 1919, in which he apparently advocates the repeal of the excise taxes on sales of tires, inner tubes, parts and accessories as well as the other excise taxes contained in Title IX of the Revenue Act of 1918:

The main thing we shall have to care for is that our taxation shall rest as lightly as possible on the productive resources of the country, that its rates shall be staple, and that it shall be constant in its revenue-yielding power. We have found the main sources from which it must be drawn.

Many of the minor taxes provided for in the revenue legislation of 1917 and 1918, though no doubt made necessary by the pressing necessities of the war time, can hardly find sufficient justification under the easier circumstances of peace, and can now happily be got rid of. Among these, I hope you will agree, are the excises upon various manufacturers and the taxes upon retail sales. They are unequal in the incidence on different industries and on different individuals. Their collection is difficult and expensive. Those which are levied upon articles sold at retail are largely evaded by the readjustment of retail prices.

With the end of the world conflict every effort should be made to bring business back to normal conditions. The release of all industries from burdensome taxes, especially when they are of a discriminatory character, should be one of the first steps in that direction.

The taxes on the sales of tires, inner tubes, parts and accessories, are of a most discriminatory character, and add greatly to the burden of the manufacturer. The tax for which the manufacturer is liable presents many almost insurmountable difficulties in accounting, and in many cases it is almost impossible to comply with the regulations of the Treasury Department. If such regulations are not strictly observed, it is probable that many



AT THE SUMMER OUTING AT ABSECON, NEW JERSEY, JUNE 24, 1919.

manufacturers will be called upon to pay a much greater amount of tax than they have reimbursed themselves for. Strict compliance with the regulations would in a great many cases necessitate a considerable increase in the clerical staff of the manufacturer and would require the assembling of a mass of records, the checking of which would probably involve care and time out of all proportion with the amount of tax collected.

The Federal Excise Tax Committee will soon arrange for a meeting of those interested, with a view to making a proper presentation to the members of Congress. In the meantime, everyone interested in the measure should write now to his Congressman and to his Senators, telling of his experience with these taxes, the difficulty of handling them properly and requesting that they be removed as soon as possible.

FIRM MEMBERS ASKED TO VOTE ON REMEDIAL RAILROAD LEGISLATION.

The Board of Directors has supplied all firm members with a copy of Referendum No. 28 of the Chamber of Commerce of the U. S. A. on the Report of the Committee on Railroads on Remedial Railroad Legislation.

This referendum contains recommendations pertaining to (1) corporate ownership and operation, (2) corporate operation, (3) adherence to the period of federal control, (4) consolidation in a limited number of strong competing systems, (5) railroad companies engaged in interstate commerce, (6) federal regulation of capital expenditures and security issues of railroads engaged in interstate commerce, (7) federal regulation of interstate rates, (8) rates in each traffic section, (9) fund for strengthening general railroad credit, (10) federal transportation board.

As it is of immediate importance that an expression of the opinion of the best business minds of the country be obtained regarding these subjects, firm members are requested to register their opinion with regard to the several questions asked in the following ballot and return to the secretary of The Rubber Association not later than July 15, 1919:

BALLOT.

- I. The committee recommends adherence to the policy of corporate ownership and operation, with comprehensive regulation.
In favor.
Opposed.
- II. The committee recommends return of roads to corporate operation as soon as remedial legislation can be enacted.
In favor.
Opposed.
- III. The committee recommends adherence to the period of federal control as now fixed unless and until impossibility of remedial legislation in this period clearly appears.
In favor.
Opposed.
- IV. The committee recommends permission for consolidation in the public interest, with prior approval by government authority, in a limited number of strong competing systems.
In favor.
Opposed.
- V. The committee recommends a requirement that railroad companies engaged in interstate commerce become federal corporations, with rights of taxation and police regulation reserved for States.
In favor.
Opposed.
- VI. The committee recommends exclusive federal regulation of capital expenditures and security issues of railroads engaged in interstate commerce, with provision for notice and hearing for State authorities.
In favor.
Opposed.
- VII. The committee recommends federal regulation of interstate rates affecting interstate commerce.
In favor.
Opposed.
- VIII. The committee recommends a statutory rule providing that rates in each traffic section shall yield an adequate return on a fair value of the property as determined by public authority.
In favor.
Opposed.
- IX. The committee recommends payment into a fund of a share of the excess earned by a railroad system under application of the above statutory rule over an equitable minimum return upon fair value of property, this fund to be

used to Congress directs for strengthening general railroad credit and increasing general railroad efficiency.

In favor.
Opposed.

- X. The committee recommends a federal transportation board to promote development of a national system of rail, water, and highway transportation and articulation of all transportation facilities.
In favor.
Opposed.

Signature of Firm Representative.

SEATTLE WHARFAGE CHARGES TO BE REDUCED.

The difficulties encountered in weighing and sampling crude rubber imports at Seattle, Washington, are being investigated by the Traffic Committee. It is expected that satisfactory arrangements will be worked out in the near future, both in connection with the weighing and sampling by local weighing companies at Seattle and in connection with the absorption of handling charges by steamship companies and railroad companies jointly which will result in the owner of the freight paying only the legal wharfage charge of 25 cents per ton, which is covered by the tariff.

SECRETARY VORHIS RESIGNS.

H. S. Vorhis, for several years secretary and treasurer of The Rubber Association, has resigned to enter other business, and A. L. Viles, formerly manager of the Traffic Division, has been elected general manager and secretary of the Association. An officer of the Guaranty Trust Co. will act as treasurer. These changes become effective July 1, 1919.

SCRAP RUBBER DIVISION MEETING.

The Scrap Rubber Division of the National Association of Waste Material Dealers held a meeting at the Hotel Astor, New York City, June 17, 1919, Herman Muehlstein, the new chairman of the Scrap Rubber Division, presiding.

Mr. Cummings, for the classification committee, reported in reference to a conference which had been held with a committee from the Rubber Reclaimers Division of the Rubber Association of America in connection with the proposed changes in the scrap rubber circular and the advisability of adopting certain trade customs.

One of the suggestions which had been made to the Rubber Reclaimers was that they eliminate that clause under "Rejections," which provided that a reclaimer could charge one-half cent per pound for handling rejected material. It has been the contention of the Scrap Rubber Division of the Association that such a charge was exorbitant in cases where the material was not sorted or rebaled. The reclaimers have consented to change their paragraph covering rejections to read as follows:

"D' REJECTIONS: Upon his request all rejections shall be returnable to the seller within thirty days from the time notice of rejection is received by him and upon payment by him of one-half cent per pound to cover cost of sorting and rebaling or if not assorted, the actual cost of handling, not to exceed one-half cent per pound. If shipping instructions are not furnished within the above-mentioned thirty days, the purchaser shall be at liberty to make such disposition of the material as he may see fit. The above does not apply if rejected material is purchased by the mill."

Another concession made by the rubber reclaimers was to insert under "Claims" as a trade custom the following:

(A) All claims, including claims for overtare, shall be reported promptly in writing, and in no event, later than thirty days from arrival of goods at consumer's station.

(B) Claims for short weight shall be reported within ten days from date of arrival at consumer's mill.

A few other suggested changes are to be made by the Rubber Reclaimers Division, while the Scrap Rubber Division of this association voted in favor of making several changes, all of which will be embodied in the new circular to be issued within the next week or ten days.

Echoes of The Great War.

BRITISH IMPORT RESTRICTIONS MODIFIED.

THE WAR TRADE BOARD announces for the information of exporters in the United States that the following changes of interest to the rubber and allied industries have been made in the import restrictions of Great Britain.

All restrictions have been removed affecting asphaltum, earth colors, earth sienna, bone black, burnt sienna, carbon black, ochre and umber.

Litharge, ultramarine, blue white lead, lamp black and reclaimed rubber will be licensed for import only exceptionally when required.

Toys and games (other than electric toys), including parts thereof, are to be admitted at the rate of 20 per cent of the 1913 importations.

The following articles are to be rationed for importation as specified:

Rubber faced hand dating and numbering stamps to be admitted at the rate of 33 1/3 per cent of the 1916 imports.

Rubber bands for stationery purposes to be admitted at the rate of 75 per cent of the 1916 imports in proportionate quarterly amounts.

Fountain pens containing no gold to be admitted at the present rate of 24 tons per annum distributed among importers.

Insulating cloths and tapes to be admitted at the rate of 25 per cent of the 1913 imports.

CITATIONS FOR TAKING BACK EMPLOYEES.

Employers who give assurance that they will gladly take back their former employees who have served in the armed forces of the United States are entitled to receive a citation issued by the War and Navy Departments. On its receipt they are authorized to place the United States shield as a symbol of this upon the red border of their service flags, provided no names of individuals or business firms appear upon the flags. The shield should be placed at the top when a flag hangs downward, as in a window; otherwise on the border nearest the mast.

Applications for citations should be addressed to Colonel Arthur Woods, chairman of the Emergency Employment Committee for Soldiers and Sailors, United States Council of National Defense, Washington, D. C.

VOCATIONAL TRAINING FOR DISABLED SOLDIERS AND SAILORS.

To meet its obligation to reestablish disabled soldiers, sailors and marines in civil life, the Government has authorized the Federal Board for Vocational Education and Congress has made an appropriation for its maintenance under the direction of Colonel Arthur Woods, assistant to the Secretary of War. Every man who has been in the United States service, whether at home or abroad, and who is considered by the Bureau of War Risk Insurance to be as much as 10 per cent disabled is entitled to be placed in an educational institution at government expense. A disabled man so incapacitated that he cannot take up his old occupation will be taught another in order that he may become self-supporting. He may choose any occupation or trade which he thinks he would like to follow, subject to the approval of the Federal Board. This applies to demobilized men as well as those still in service, and the Federal Board is making every possible effort to get in touch with all men who were discharged before it began to function. Meanwhile such men as wish to avail themselves of this opportunity should make application to the nearest of the fourteen district offices of the Federal Board for Vocational Education, which are located in Boston, New York, Philadelphia, Washington, Atlanta, New Orleans, Cincinnati, Chicago, St. Louis, Minneapolis, Denver, San Francisco, Seattle and Dallas.

While in training a man receives an amount equal at least to the base pay received during his last month's service in the Army, Navy or Marine Corps, but in no case does he receive less than \$65 per month if a single man, less than \$75 per month if living with his dependents, nor less than \$65 per month for himself if living apart from his dependents—in addition to allowances to his dependents if married and living apart from his wife during the period of training. In all cases the wife receives \$15, and each minor child \$10 per month. Men who have been blinded in battle or who have lost both arms or both legs, or who as a result of injuries incurred are permanently and totally disabled, it may be noted, come under a special provision which allows them \$100 per month additional.

THRIFTY WORKERS CUT DOWN PRODUCTION COSTS.

Every business concern to-day faces the problem of cutting down production costs. If the thought "Save!" can be brought home to every employee every day for one year, it should be possible to reduce expenses through economy in material and time, moreover, personal thrift would also be encouraged and the savings would be invested in War Savings Stamps.

Numerous ways to launch a thrift campaign in any business organization have been suggested.

First, in each pay envelope enclose a blank bearing two questions, to be answered by every employee: 1. What can and will you do to cut down the operating expense of the company? 2. What ways can you suggest by which others can cut down expenses?

Second, enclose a blank for stating weekly how the employee was able to cut down operating expenses by some short cut to the saving of material and time.

Pay envelopes and house organs should contain practical economy talks by department heads, showing ways of saving, and articles should also be published telling what individuals have done along this line.

In every work-room, stock-room, sales-room, department and branch, posters should be put up making definite appeals for economy of various costs, and these should be frequently changed.

Personal letters should be written by executives or department heads, commending every employee who has done anything worth while in the saving line, to let him or her know that such effort is appreciated.

Monthly results of saving in figures should be compiled and published.

Wherever savings can be put into figures—reduced costs, increased profits and actual money—the savings should be shared with employees in the form of prizes or bonuses.

THRIFT AND SAVINGS STAMPS TO CONTINUE.

War has taught the country some wholesome lessons in thrift worthy of being perpetuated, for the peace-time needs of the country, especially during the reconstruction period, are very great and should inspire further effort. In order that the habits of saving and the intelligent use of money may become one of the lasting national activities of the American people, and particularly that a safe method of investment may be afforded, the Treasury Department is continuing the sale of Savings and Thrift Stamps. Churches, fraternal and social organizations, commercial associations and business houses, are keeping the benefits of thrift before their membership or employees by the continuation or organization of thrift clubs and savings societies. Many rubber companies are interested because the movement means better citizens, better communities, and a better country.

GERMANY FEARS AMERICAN TRADE PREJUDICE.

Germany's prospects of resuming commercial relations with the United States are dealt with in a statement which the German paper, "Der Konfektionär," attributes to Arthur Dunning, general secretary of the American Chamber of Commerce in Berlin, who is quoted as saying that while business relations cannot be resumed as long as the Trading with the Enemy Act remains in force, the time has come to make preparations for future trade. He believes the best foundations exist for the resumption of business relations, as German warehouses are empty and the credit of the hard-working German business man stands high. American commissions, he points out, are visiting Holland, Denmark and Scandinavia to examine into the opportunities for American export, and similar commissions and trade experts will enter Germany immediately after the conclusion of a preliminary peace and the raising of the blockade. Probably two or three years will have to elapse before the anti-German feeling still prevailing among the masses of the American people will be transformed into a mutual understanding and cooperation. Meanwhile, German industries will hardly be strong enough to supply foreign markets to any large extent, and as extraordinary difficulties will be thrown in the way of permits to enter America during the next few years, German business men will do well to allow their business to be conducted by the American Chambers of Commerce and other official channels shortly to be organized for this purpose.

COMMUNITY TO BENEFIT BY WAR FUNDS.

At the close of its war work, the War Service Union, Jeannette, Pennsylvania, of which Seneca G. Lewis of the Pennsylvania Rubber Co. is president, had \$15,000 on hand, while the Chamber of Commerce had \$10,000. It was decided to use the money for the erection of a combined municipal and community building, containing an auditorium, reading rooms, gymnasium, swimming pool, etc. This will provide a town club of which every resident of Jeannette is to be considered a member.

HISTORY OF RUBBER PRICES DURING THE WAR.

A history of prices during the war, and covering the period from the beginning of 1913 to the end of 1918, is being published by the Price Section of the War Industries Board. It will consist of 57 bulletins which are now in press and will be issued piecemeal as rapidly as possible. The first seven are of general character and will be followed by 50 bulletins, each devoted to a single important branch of industry. Bulletin No. 30 will deal with rubber and rubber products. The history has been prepared for the information of business men and may be had on application.

AMERICAN OFFICERS IMPROVE SPARE TIME IN FRANCE.

The following letter from a former employee of The B. F. Goodrich Co., Akron, Ohio, now a lieutenant in the American Expeditionary Forces, still in France, which has been received by F. W. Jones, manager of clothing sales.

NANTES, FRANCE.

DEAR "CHIEF":

I was pleased to find your letter of April 14 on my desk when I returned from a week's trip—partly business and pleasure—to Paris, Chateau-Thierry, Reims, Argonne, Meuse Sector and Verdun. For the past month I have been very busy here, as we emptied and filled the embarkation area several times. At present the 79th Division is here.

My trip up along the old front with Captain Bliss, my Washington friend, was a wonder. We explored miles of trenches, dug-outs, No man's Land, forts, etc. There are still a number of unburied German and French dead; it was a common occurrence to pick up a boot with a leg or foot left in it. Our own American boys have all been well taken care of and laid to rest in well-kept cemeteries—thanks to our Graves Regiment Service. Verdun (which the French consider the Waterloo of this war) is certainly a great military stronghold with its sur-

rounding forts. The citadel, or underground fort in Verdun itself is capable of holding 40,000 troops and is a complete military camp—hospital, bakeries, etc.

My leave to visit points in Italy was granted for May 5, but since the break at the Peace Conference, Italy has been closed as a leave area for the A. E. F. I think the Captain and I will substitute an extended trip through France, visiting Lyons, Marseilles, Nice, Monte Carlo, Mentone, Nîmes, and down into the Pyrenees mountains and Spanish border to Pau, Bayonne and Biarritz. We shall probably be able to get over into Italy by automobile for a day or so, but Spain being neutral, about one foot will be all we can get over the line there.

I am hoping to sail in July if possible. We have lost our colonel here, so I am not sure just what to expect from the present Commanding Officer. Our old colonel was certainly a regular fellow. My brother sailed on the 19th—S. S. *Mercury*, and is in the United States by now, I think. He is very fortunate, as he can be in business by June 1, O. K. I should like to be back by that time, but it is doubtful if I return before August 1. I'll not mind it so much if I succeed in getting to London and into Scotland and Ireland before I return. I am rather disappointed regarding my Italian trip, because I wanted to see Venice and Rome and Mt. Vesuvius.

Conflicting reports continue to reach us over here regarding business conditions. I am enclosing a couple of clippings from Syracuse papers which seem to look good for central New York as a patriotic commercial center. I am very proud of my home city.

Before returning home I expect to see France become sensible and open the door so the much-needed American products can play the part they should in the early reconstruction work. The French work in a peculiar way; instead of returning to their ruined homes or business places and blasting out and rebuilding anew, as we would do, they come back, select one room that has met with the least disaster, roof and wall it up with tar paper, etc. They start in part by part to clean up and rebuild over the parts still standing.

Cordially yours,
TIP GOES.

FAIR AT BRUSSELS TO END WAR ABUSES.

The municipal government of Brussels will hold a commercial fair in September, with the object of putting an end to the abuses brought about by the war, lowering the prices of foodstuffs, and bringing about normal conditions, at the same time attracting world trade in competition with German fairs. This fair will offer the manufacturers and producers of allied and neutral countries an opportunity of meeting and coming into direct contact with the buyers.

Only a moderate charge will be made for space sufficient, it is hoped, to meet expenses, and preference will probably be given to Belgian exhibitors, in consideration of the condition of the commerce and industry of that country at present. The Belgian people look forward to this fair being even more successful than those held during the war at Lyons, Basel, and Utrecht.

RUBBER EXPORTS AND IMPORTS FOR MADAGASCAR.

Madagascar, French East Africa, and its dependencies exported only 70,547 pounds of crude rubber, value 127,468 francs, during 1917, as compared with 220,460 pounds, value 348,530 francs, during 1916. During 1917 it also imported from America only 947,978 pounds of rubber goods, value 1,451 francs, as compared with 1,082,458 pounds in 1916, value 1,784 francs. The extension of American trade with Madagascar has been greatly hampered because of lack of transportation facilities.

DON'T WAIT TO GET THAT LARGE SUM FOR INVESTMENT. PUT ALL the little bits in Thrift Stamps and War Savings Stamps and you will soon have a large sum invested.

Alien Enemy Patents Available Under License.

THE ALIEN ENEMY OWNED UNITED STATES PATENTS relating to chemical and allied industries which were seized under authority of presidential proclamation by the Alien Property Custodian have been sold to three American companies, The Chemical Foundation, Inc., Grasselli Chemical Co., and Bayer, Inc.

The patents controlled by the Bayer company relate to pharmaceuticals, while those held by the Chemical Foundation and by the Grasselli company relate to industrial processes and products. Such of these patents as are of interest to rubber manufacturers are enumerated in the following lists, which were compiled from that of the Chemical Foundation supplemented from the files of THE INDIA RUBBER WORLD.

All persons desiring to manufacture under any of these patents may now secure licenses permitting them to do so by application to the respective controlling companies.¹

PATENTS OWNED BY THE CHEMICAL FOUNDATION, INC.

Patent No.	Date.	Title.
708,227	Sept. 16, 1902.	Process of manufacturing vulcanized froth.
708,228	Sept. 16, 1902.	Process of preparing and treating vulcanized froth.
715,462	Dec. 9, 1902.	Method of manufacturing molded elastic goods.
715,837	Dec. 16, 1902.	Comb.
716,059	Dec. 16, 1902.	Tire for motor vehicles.
723,890	Apr. 21, 1903.	Process of making camphens.
737,745	Sept. 1, 1903.	Felice for vehicle wheels.
738,574	Nov. 17, 1903.	Protecting mantle for cycle or air tires.
757,831	Apr. 19, 1904.	Floor or like brush.
757,907	Apr. 19, 1904.	Tooth brush with washing device.
758,063	Apr. 19, 1904.	Air hose.
763,489	June 29, 1904.	Irretrievable hose joint.
765,290	July 19, 1904.	Tire cover of undressed leather.
765,312	Dec. 13, 1904.	Fastening for making tires.
775,567	Jan. 10, 1905.	Reservoir attachment for pens.
780,499	Jan. 17, 1905.	Fastenings to solid tires.
783,466	Feb. 28, 1905.	Artificially made tires.
786,527	Apr. 4, 1905.	Manufacture of a substitute for caoutchouc.
787,473	Apr. 18, 1905.	Air cushion.
787,925	Apr. 18, 1905.	Tire.
788,996	May 2, 1905.	Elastic stocking.
863,927	Nov. 7, 1905.	Fastening pin.
864,218	Nov. 14, 1905.	Gymnastic apparatus.
864,220	Nov. 14, 1905.	Artificial tooth-elastic bottom plate).
864,272	Nov. 14, 1905.	Respirator.
865,503	Nov. 28, 1905.	Vulcanizing hand-splashes articles having interior
858,851	Nov. 28, 1905.	Medicinal injector.
811,109	Jan. 1, 1906.	Pneumatic tire.
815,771	Apr. 24, 1906.	Tire for wheels.
821,394	May 22, 1906.	Dissolving and regenerating rubber.
821,868	May 2, 1906.	Ammonia for tires.
822,786	June 5, 1906.	Elastic wheel tire.
825,060	July 3, 1906.	Process of reclaiming vulcanized rubber waste.
826,073	July 10, 1906.	Cushion for hernia trusses.
830,495	Sept. 10, 1906.	Process of and apparatus for manufacturing lined metallic hose.
833,633	Oct. 16, 1906.	Device for preventing sea sickness on ships.
844,077	Feb. 12, 1907.	Process for the production of aqueous caoutchouc solutions and the regeneration of rubber waste.
844,242	Feb. 12, 1907.	Butt supporter.
851,960	Apr. 9, 1907.	Process for manufacturing elastic fittings for tires.
852,273	Apr. 30, 1907.	Elastic cob.
852,500	Aug. 5, 1907.	Filter for dust suction apparatus.
863,523	Jan. 13, 1907.	Letter, figure and the like in relief.
865,443	Sept. 10, 1907.	Mold for pneumatic tires.
865,495	Nov. 26, 1907.	Multi-part mold for pneumatic tires.
873,501	Dec. 10, 1907.	Elastic tire for wheels.
877,769	Jan. 28, 1908.	Protector against skidding.
885,330	Apr. 21, 1908.	Dress preserver or dress shield.
890,592	May 12, 1908.	Automobile tire.
895,260	June 30, 1908.	Process of separating india rubber for vulcanization.
894,460	July 29, 1908.	Process for the production of pure caoutchouc.
897,364	Sept. 1, 1908.	Method of manufacturing elastic material.
897,630	Sept. 1, 1908.	Detachable rim for vehicle wheels.
898,430	Nov. 24, 1908.	Process for vulcanizing rubber solution.
906,306	Dec. 8, 1908.	Elastic tire for wheels.
906,834	Dec. 15, 1908.	Elastic tire for wheels.
908,509	Jan. 5, 1909.	Nozzle for syringes and the like.
909,001	Jan. 5, 1909.	Detachable wheel rim serving as tire retainer.
909,003	Jan. 5, 1909.	Nozzle for syringes and the like.
910,530	Jan. 12, 1909.	Method of manufacturing solutions of caoutchouc.
910,379	Jan. 26, 1909.	Safety hose coupling for railway air-brakes.
922,148	Mar. 1, 1909.	Process for regenerating rubber waste of all kinds.
927,198	July 6, 1909.	Process for the production of a leather substitute.
930,874	Aug. 10, 1909.	Cellulose substitute.
935,516	Sept. 7, 1909.	Connecting hose for railway cars.

Patent No.	Date.	Title.
934,184	Sept. 14, 1909.	Detachable wheel rim.
935,090	Sept. 29, 1910.	India-rubber, process for devulcanizing.
935,414	Sept. 28, 1909.	Rubber.
935,849	Oct. 1, 1909.	Alloys for washing caoutchouc, gutta percha and similar substances.
936,633	Oct. 12, 1909.	Apparatus for washing caoutchouc and similar substances.
940,456	Nov. 9, 1909.	Superheater for use in connection with vulcanizers and other apparatus.
940,410	Dec. 14, 1909.	Packing for piston rods and the like.
940,410	Jan. 4, 1910.	Horse-shoe with elastic bridges covering both ends.
946,990	Jan. 11, 1910.	Machine for armoring cables.
947,535	Jan. 25, 1910.	Cushion tire for vehicle wheels. Pump
950,922	Oct. 22, 1910.	Substitute for celluloid.
951,811	Mar. 15, 1910.	Utilization of waste rubber.
953,094	Mar. 29, 1910.	Process for devulcanizing india rubber.
954,237	Mar. 29, 1910.	Elastic wheel.
956,116	May 31, 1910.	Method of producing a caoutchouc-like elastic substance.
961,244	July 12, 1910.	Separator (vulcanized rubber from fiber).
963,803	July 26, 1910.	Process for hardening condensation products and aldehydes.
967,240	Aug. 16, 1910.	Spring tire for wheels (with cushion tire).
967,583	Aug. 16, 1910.	Compressive hose.
971,364	Sept. 27, 1910.	Wheel for vehicles.
975,137	Nov. 8, 1910.	Removable wheel rim for pneumatic tires.
978,541	Dec. 13, 1910.	Woven elastic fabric.
980,712	Mar. 14, 1911.	Vat-washing-machine ring.
980,790	July 25, 1911.	Tire for vehicle wheels.
981,892	Aug. 29, 1911.	Balloon envelope material.
983,244	Sept. 12, 1911.	Purifying rubber or gutta percha.
1,006,274	Oct. 17, 1911.	Process for the manufacture of rubber substitute.
1,006,976	Oct. 17, 1911.	Dental appliance.
1,010,751	Dec. 5, 1911.	Boot-tire for use in treading machines.
1,015,367	Dec. 19, 1911.	Detachable wheel rim.
1,015,475	Dec. 19, 1911.	Elastic tire.
1,016,991	Feb. 13, 1911.	Elastic tire.
1,017,598	Feb. 13, 1911.	Tire.
1,017,608	Feb. 13, 1911.	Vehicle wheel with elastic spokes.
1,020,797	May 19, 1911.	Vehicle wheel rim.
1,025,122	May 7, 1912.	Machine for making dress shields of india rubber.
1,030,418	Aug. 1, 1912.	Producing diolefines.
1,036,419	May 14, 1912.	Producing diolefines.
1,036,420	May 14, 1912.	Producing diolefines.
1,031,613	July 2, 1912.	Process for producing coats.
1,031,337	July 2, 1912.	Process of manufacturing caoutchouc like products.
1,035,640	July 16, 1912.	Rubber sole for shoes and the like.
1,036,182	Aug. 6, 1912.	Tire for automobile wheels.
1,037,729	Aug. 6, 1912.	Device for holding in reins, leashes and the like.
1,038,197	Aug. 6, 1912.	Elastic material.
1,040,532	Aug. 27, 1912.	Shelter for dirigible balloons, airships, and the like.
1,037,358	Aug. 27, 1912.	Process of manufacturing substitutes for oils, caoutchouc, resins and the like.
1,038,950	Sept. 10, 1912.	Process of manufacturing hot vulcanized froth from india rubber, gutta percha, and balata.
1,039,316	Sept. 24, 1912.	Method of rendering the joints of the casemated war-ships.
1,040,850	Oct. 8, 1912.	Process of preparing condensates from cascin, phenols, and formic aldehyde and the product obtained thereby.
1,042,795	Oct. 29, 1912.	Apparatus arranged on locomotives and other power-propelled vehicles for utilizing the resistance of the wheels.
1,043,030	Nov. 5, 1912.	Bottle closure.
1,043,653	Nov. 19, 1912.	Bagsman wearing apparel, cloak, and other articles.
1,045,574	Nov. 26, 1912.	Rupture-truss.
1,047,083	Dec. 17, 1912.	Turbine compressor or pump for elastic fluids.
1,048,592	Dec. 31, 1912.	Apparatus for extracting rubber.
1,049,346	Jan. 7, 1913.	Artificial leeching apparatus.
1,050,129	Jan. 14, 1913.	Producing elastic vehicles.
1,051,046	Jan. 21, 1913.	Brake pipe for railway cars.
1,051,767	Jan. 28, 1913.	Cushion heel.
1,052,430	Feb. 4, 1913.	Vulcanizing distinct parts or surfaces of rubber.
1,054,060	Feb. 25, 1913.	Soldering apparatus.
1,057,680	Mar. 1, 1913.	Production of isoprene.
1,061,535	May 13, 1913.	Apparatus for administering narcotics.
1,061,881	May 13, 1913.	Process for the production of a plastic or elastic substance.
1,062,793	May 27, 1913.	Producing rubber-like compounds.
1,065,182	June 17, 1913.	Producing isoprene.
1,066,873	Aug. 5, 1913.	Vent for nursing nipples.
1,069,151	Aug. 19, 1913.	Process for the production of an insulating coating on electrical conductors.
1,070,294	Aug. 12, 1913.	Producing butadiene and derivatives thereof.
1,070,400	Aug. 19, 1913.	Life-saving device.
1,073,498	Sept. 16, 1913.	Elastic wheel.
1,074,881	Oct. 7, 1913.	Dry viscose in a granular, soluble, and stable condition and process of preparing the same.
1,076,490	Oct. 21, 1913.	Method of vulcanizing.
1,077,143	Oct. 28, 1913.	Welding stick.
1,077,766	Nov. 4, 1913.	Ear appliance for facilitating hearing.
1,080,164	Dec. 30, 1913.	Producing isoprene.
1,083,165	Dec. 30, 1913.	Producing isoprene.
1,086,159	Dec. 31, 1913.	Process of manufacturing caoutchouc like products.
1,087,261	Jan. 6, 1914.	Process of manufacturing isoprene.
1,087,815	Feb. 17, 1914.	Horse shoe filling of rubber.
1,088,349	Feb. 24, 1914.	Removable rim attachment for vehicle wheels.
1,088,907	Mar. 1, 1914.	Process of manufacturing a substitute for vulcanite.
1,089,482	Mar. 16, 1914.	Process of manufacturing an elastic foam from volatile solutions.
1,089,805	Mar. 16, 1914.	Medical appliances.
1,089,932	Mar. 16, 1914.	Milking device.
1,090,074	Mar. 16, 1914.	Compounds or derivatives of cellulose and process of obtaining the same.
1,095,058	Apr. 28, 1914.	Adhesive resins preparations and process of producing the same.

¹This address of the Chemical Foundation, Inc., is 31 Fulton street, New York City, and of the Grasselli Chemical Co., 347 Madison avenue, New York City.

Patent No.	Date.	Title.
1,067,973.	May 26, 1914.	Tennis or like ball.
1,068,351.	May 26, 1914.	Artificial denture.
1,068,558.	June 2, 1914.	Isoprene derivatives of the amyl series.
1,068,856.	June 2, 1914.	Isoprene copolymer.
1,069,167.	June 2, 1914.	Process for manufacturing a substance resembling natural rubber.
1,099,144.	June 2, 1914.	Device for inflating cushions, etc.
1,100,778.	June 23, 1914.	Fountain pen.
1,101,112.	June 23, 1914.	Electric heating device.
1,103,003.	July 7, 1914.	Detachable wheel rim.
1,104,722.	July 21, 1914.	Vulcanizer.
1,105,368.	July 28, 1914.	Electric bedding plate.
1,106,748.	Aug. 11, 1914.	Pneumatic tire.
1,107,480.	Aug. 11, 1914.	Removable rim attachment for vehicle wheels.
1,107,555.	Aug. 18, 1914.	Spring wheel.
1,124,134.	Dec. 15, 1914.	Process of making caoutchouc substitute.
1,122,465.	Dec. 29, 1914.	Vulcanizer press.
1,125,019.	Jan. 12, 1915.	Basic heel protector.
1,131,490.	Mar. 9, 1915.	Diving apparatus.
1,140,418.	May 25, 1915.	Toy or joke article.
1,144,812.	June 29, 1915.	Freely portable breathing apparatus.
1,150,508.	Aug. 17, 1915.	Respiratory mask or helmet.
1,154,622.	Aug. 17, 1915.	Process of manufacturing condensation products from formaldehyde and phenol.
1,153,030.	Sept. 7, 1915.	Diver's dress.
1,153,655.	Sept. 14, 1915.	Telephone cable.
1,156,153.	Oct. 12, 1915.	Vehicle wheel having a solid tire.
1,159,125.	Nov. 2, 1915.	Diver's helmet.
1,159,878.	Nov. 9, 1915.	Process for forming casein masses.
1,159,869.	Nov. 9, 1915.	Process for forming casein masses.
1,160,873.	Jan. 4, 1916.	Fountain pen.
1,162,518.	Jan. 11, 1916.	Manufacture of froth fillings.
1,163,070.	Jan. 11, 1916.	Manufacture of isoprene and homologs.
1,169,984.	Feb. 1, 1916.	Elastic wheel with solid tire.
1,171,417.	Apr. 18, 1916.	Ammunition box with rubber buffers.
1,180,704.	Apr. 25, 1916.	Method of producing waterproof coatings of balata.
1,181,049.	Apr. 25, 1916.	A wheel for cars, equipped with removable solid rubber tires.
1,189,110.	June 27, 1916.	Producing substances resembling caoutchouc.
1,189,788.	July 4, 1916.	Resilient tire.
1,189,789.	July 4, 1916.	Resilient tire.
1,191,801.	July 18, 1916.	Process for manufacturing plastic substances from the derivatives of cellulose.
1,192,036.	July 25, 1916.	Resilient tire.
1,192,310.	July 25, 1916.	Caoutchouc-like substances and process of making them.
1,195,117.	Aug. 15, 1916.	Device for removing wrinkles.
1,195,556.	Aug. 22, 1916.	Resilient tire.
1,195,519.	Nov. 28, 1916.	Resilient tire for flat feet.
1,208,653.	Dec. 12, 1916.	Fountain pen.
1,209,223.	Dec. 19, 1916.	Diving dress.
1,209,224.	Dec. 19, 1916.	Diving helmet.
1,213,824.	Jan. 30, 1917.	Elasto wheel tire.
1,214,414.	Jan. 30, 1917.	Condensation product from phenols and formaldehyde.
1,218,332.	Mar. 6, 1917.	Manufacture of diolefine (isoprene) caoutchouc and caoutchouc-like substances.
1,218,713.	Mar. 13, 1917.	Production of caoutchouc-like bodies.
1,219,246.	Apr. 3, 1917.	Resilient tire.
1,222,683.	Apr. 17, 1917.	Respirator.
1,238,528.	Aug. 28, 1917.	Process of making plastic masses.
1,239,930.	Sept. 4, 1917.	Artificial process of assembling caoutchouc.
1,248,888.	Dec. 4, 1917.	Treating products resembling caoutchouc.
1,260,684.	Mar. 26, 1918.	Rubber-mixing machine.
1,294,662.	Feb. 15, 1919.	Producing substances resembling caoutchouc.

PATENTS OWNED BY GRASSELLI CHEMICAL CO.

1,062,828.	May 27, 1913.	Caoutchouc-like substance and process of making same.
1,062,912.	May 27, 1913.	Caoutchouc-like substance and process of making same.
1,062,913.	May 27, 1913.	Caoutchouc substance and process of making same.
1,062,914.	May 27, 1913.	Caoutchouc substance and process of making same.
1,062,915.	May 27, 1913.	Caoutchouc substance and process of making same.
1,069,951.	Aug. 12, 1913.	Caoutchouc substance and process of making same.
1,070,258.	Aug. 12, 1913.	Production of caoutchouc substances.
1,070,330.	Aug. 12, 1913.	Process of producing caoutchouc-like substances.
1,074,432.	Sept. 30, 1913.	Caoutchouc substance.
1,076,195.	Oct. 1, 1913.	Manufacture and production of a caoutchouc-like material.
1,076,575.	Oct. 21, 1913.	Process of producing beta-gamma-dimethylstyrene.
1,081,613.	Dec. 16, 1913.	Vulcanized caoutchouc and process of making same.
1,081,714.	Dec. 16, 1913.	Caoutchouc substance and process of making same.
1,082,522.	Dec. 30, 1913.	Caoutchouc substance and process of making same.
1,084,333.	Jan. 13, 1914.	Caoutchouc substance and process of making same.
1,084,334.	Jan. 13, 1914.	Vulcanized caoutchouc-like substance.
1,084,335.	Jan. 13, 1914.	Vulcanized caoutchouc-like substance.
1,084,336.	Jan. 13, 1914.	Vulcanized caoutchouc-like substance.
1,084,337.	Jan. 13, 1914.	Vulcanized caoutchouc-like substance.
1,084,338.	Jan. 13, 1914.	Vulcanized caoutchouc-like substance.
1,094,159.	Apr. 21, 1914.	Process of producing keto compounds from ketones and aldehydianomethanes.
1,094,160.	Apr. 21, 1914.	Process of producing keto compounds from tetra-allyldianomethanes.
1,094,539.	Apr. 28, 1914.	Process of producing 1,3-butadienylglycol.
1,113,614.	Oct. 13, 1914.	Colored caoutchouc substances and process of making same.
1,113,630.	Oct. 13, 1914.	Process for the production of caoutchouc substances.
1,113,631.	Oct. 13, 1914.	Production of caoutchouc substances.
1,113,759.	Oct. 13, 1914.	Colored caoutchouc substances and process of making same.

1,126,469.	Jan. 26, 1915.	Vulcanization of rubber and production of vulcanized rubber products.
1,130,903.	Mar. 9, 1915.	Production of vulcanized synthetic caoutchouc.
1,149,577.	Aug. 10, 1915.	Caoutchouc substance and process of making same.
1,149,580.	Aug. 10, 1915.	Caoutchouc substance and vulcanization product thereof.
1,150,508.	Nov. 2, 1915.	Isoprene.
1,150,509.	Apr. 11, 1916.	Isoprene.

THE SCRAP AND RECLAIMED RUBBER SITUATION.

DESPITE returning activity in rubber goods manufacturing in America stagnation is manifest in the scrap and reclaimed rubber markets. The demand for reclaimed rubber has seriously fallen off and reclaimers are operating their plants at less than full capacity, buying scrap only for actual needs. These conditions have reduced the demand for scrap rubber to a minimum.

This situation is attributable to the low prices ruling for crude rubber and to the relatively high prices asked for scrap. The price of crude rubber is the leading factor and scrap prices are secondary.

The better grades of reclaimed rubber are competitive with crude, consequently they find no sale when the prices asked raise the cost of their rubber content to practically that of crude rubber.

These price conditions have become operative since the first of the year and for some weeks past plantation *Hevea* has been and still remains a better purchase, on the basis of rubber value, than the better grades of reclaim. Manufacturers who were, hitherto, large users of reclaim are now giving preference to crude and this tendency is extending.

Scrap dealers claim there is no profit in their business at less than current prices, and reclaimers assert that the prices at which scrap is held by dealers practically forbid its conversion into products that can compete with crude rubber. Manufacturers of rubber goods are willing to use large quantities of reclaim, but are demanding lower prices. The reclaimers in turn are doing all possible to get the price of scrap on a lower basis and are not paying the prices asked except for shoes. They are fairly well satisfied in respect to tires, but claim that the prices asked for boots and shoes are very much in excess of this comparative value. Reclaimers frankly admit they are facing a critical situation in this matter and whether scrap prices will fall to the levels indicated by them is open to question. No less serious and trying is the difficulty in which the scrap dealers are placed.

Present scrap quotations are nearing the levels indicated as necessary by reclaimers, and the transition to more active buying does not appear to be far off. Probably the situation will ultimately be relieved by mutual concessions. Reclaimers believe that when buying starts there will be a big movement in scrap, owing to the fact that the output of rubber goods will be mostly for civilian use not subject to the restriction of reclaim operative in the manufacture of rubber goods for government use.

The common interest of reclaimers and scrap dealers calls for maximum cooperation to improve their trade situation.

Mutual price concessions must be supplemented by activity in seeking new outlets for the materials.

Already scrap dealers are finding a measure of relief in developing the business of supplying repairable tires for numerous tire-rebuilding companies, and supplying the voluminous demand of the tire repair trade for salvaged building fabric stripped from discarded automobile tires.

It is possible that reclaimers may try the manufacturing field, particularly along such lines as will afford ample outlet for their reclaim products. For example, rubber pavement and tiling have already been satisfactorily demonstrated and doubtless numerous other needs will be developed in the processes of invention and search for increased uses of rubber.

The British and United States Rubber Goods Export Trade Compared—1913-1918.

THE REPORT recently issued by the research bureau of the War Trade Board on the export trade policy of the United Kingdom for 1913-1918 indicates clearly the drastic measures which Great Britain has taken in cutting down her foreign trade in order to win the war, and they seem all the more drastic when her problems concerning foreign exchange are considered as well as the further fact that so much tonnage now departs from her ports in ballast.

While the rubber manufacturing industry has suffered less heavily than some other British industries, the sacrifices are shown to have been great, and the comparison with exports of similar American goods for corresponding periods is of interest.

Both the United Kingdom and the United States show increased exports of various products in different years to the European allies, these increases being greater on the part of the United States, in some instances, than on the part of the United Kingdom, partly because the latter was in the war from the beginning and unable to spare so much to her allies as was the United States.

RUBBER BOOTS AND SHOES.

In 1913 a little over 1,500,000 pairs of rubber boots and shoes were exported from the United Kingdom. In the first half of 1918 this had fallen to about 500,000 pairs, or about two-thirds of the former number. Of the countries specified, France is the only one showing an increase of purchases. British reexports of rubber boots and shoes showed a notable increase to the end of 1916 to Norway, Denmark and other countries. The total reexport in 1917 was over five times as great as the total for 1913, but had dropped to practically nothing by the first half of the calendar year 1918.

As compared with this, the United States exported over 2,666,000 pairs of rubber boots and shoes in 1913. Exports increased to nearly 4,000,000 pairs in 1917, but fell below 3,000,000 pairs in 1918, which, however, was nearly 20 per cent greater than in 1913. Excluding exports to the European allies, the quantity sold by the United States has fallen to one-half what it was in 1913. Early shipments to Belgium and Italy were large, but practically all of the increase, especially since the war began, has been to France and the United Kingdom. There have been large relative increases also in our much less important shipments to Newfoundland and Labrador, and some increase in shipments to Canada and South Africa. The shipments to South America and Asia have fallen off very much.

RUBBER TIRES AND TUBES.

In terms of value the United Kingdom domestic exports¹ of rubber tires and tubes increased from over \$6,000,000 in 1913 to over \$10,000,000 in 1916, but showed a marked decrease in 1917 and the first half of 1918. Were increasing prices taken into account, it is probable that the total exports have decreased in

quantity during the period from 1913 to 1918. A considerable part of the exports went to France and Italy. From 1913 to 1916 there were increases in terms of value, though probably not in quantity, to Sweden, Denmark and Switzerland, as well as to British India and Australasia. There have been decreases, even in terms of value, to Argentina and Brazil.

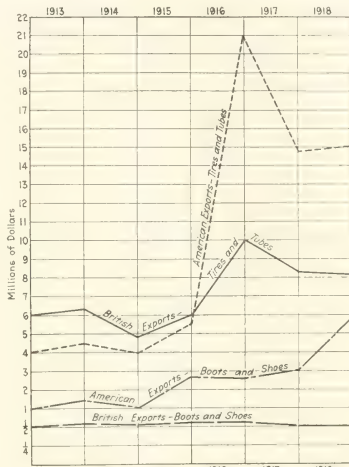
United States exports² of tires and tubes increased from \$4,500,000 in 1913 to \$21,000,000 in 1916, though the total had fallen to a little over \$15,000,000 in 1918. Excluding exports to the European allies, the total increased from less than \$3,000,000 in 1913 to over \$13,000,000 in 1918.

The great increases to the European allies were in the years 1915 to 1917, mostly in 1916, and the amount sent to them in 1918 was actually less than in 1913 or 1914. There have been especially large increases in sales to Canada, Mexico and North American countries; also huge increases to South American countries, notably to Argentina, Brazil, Chile, Peru, Uruguay and Venezuela, the total to South America being over sixteen times as great in 1918 as in 1913 or 1914. Much the same is true of shipments to Australia, New Zealand and Japan. Quantity statistics are not available, and it should be remembered that statistics in terms of value exaggerate the facts.

OTHER RUBBER MANUFACTURES.

British exports of rubber manufactures other than boots and shoes, tires and tubes, and waterproofed apparel, fell off greatly in terms of value during the years 1914 and 1915, but in 1916 and 1917 were almost as great as in pre-war years. They showed some decline, however, in the first half of 1918. During the years 1914 to 1916, inclusive, exports to France increased about 50 per cent, and there were also increases to British India, China, Australia and New Zealand. During the same period exports decreased about 35 per cent to Italy; there were marked decreases to the United States, Mexico, Argentina and Brazil, while exports to Belgium were practically discontinued. Were the figures converted into terms of tons decreases would be shown in nearly every case.

Prior to the war the value of all American exports of rubber manufactures, other than boots and shoes, tires and tubes, belting, hose, packing, reclaimed, scrap and old rubber, was a little less than half that of corresponding British exports. While the value of such British exports was about the same in 1917 as it had been in 1913, the value of corresponding United States exports had more than doubled, being \$8,250,000, but falling to \$6,000,000 in 1918. There have been large increases in exports of this class of goods to the European allies, especially to France, Italy, and the United Kingdom; also to Canada, Mexico, Cuba, Argentina, Brazil, Chile, Peru, Uruguay, Venezuela, Japan, Australia and New Zealand. Here again, however, the quantities are exaggerated somewhat by the price data.



COMPARISON OF UNITED STATES AND BRITISH EXPORTS.

¹ Calendar year. ² Fiscal year.

Rubber Pavements: A Historical Résumé.

When the price of india rubber is constantly reaching new low levels, production capacity on the increase, unused raw stocks, heavy and scrap rubber plentiful, the rubber growers are devoting more attention than ever to finding new uses for their product, especially the lower qualities. The Rubber Growers' Association of London is moving in the matter, but no definite solution of the problem has yet been advanced.

Among the many prospective new uses for rubber, none is more important than its employment as a paving material and the opinion is freely expressed that with rubber at its present price we may look forward to its extensive use for that purpose. Rubber pavements are no longer in the experimental stage; their desirability, efficiency and durability have been convincingly demonstrated; their wide adoption will come when an adequate and continuous supply of rubber at low prices is assured, and that time appears to be near at hand.

Rubber flooring, both in the form of matting and tiling, has long been employed extensively in hotels, banks, churches, libraries, hospitals and other public buildings, stock exchange and large offices of many sorts, steamships, railway coaches and even for skating rinks, tennis and badminton courts, where its qualities of silence, cleanliness, neat appearance and comfort to the feet have been much appreciated and its beneficial effect upon the acoustic properties of large halls fully realized.

The practicability of such floorings is obvious to anybody, but the use of rubber in building highways has been regarded with considerable doubt by all not thoroughly familiar with the peculiar characteristics of rubber, and before rubber pavements are widely adopted a great deal of missionary work will have to be done. With the cost at about \$25 per square yard, it is useless to expect a municipality to consent to laying down miles of rubber road unless officials are convinced of its durability. While costly at the outset, experience has shown that rubber pavement lasts much longer than any other and will be less expensive in the long run.

ADVANTAGES OF RUBBER PAVEMENTS AND SIDEWALKS.

Aside from their remarkable lasting qualities, the chief claim for rubber pavements is that they eliminate the incessant clatter of city streets. The tremendous nerve-wrack of city noises is everywhere recognized by neurologists who attribute the greater prevalence of nervous disorders in cities to the constant din, of which traffic noises constitute seven-eighths. Most cities of any size have their anti-noise societies seeking to lessen noise nuisances of every sort. In modern rubber pavements such organizations will find a solution of many of their problems, and one which can be advocated with both confidence and conscience.

Rubber pavements would also add much to the comfort of those who must ride in other than pneumatic-tired vehicles, and would be far better for horses than any of the hard pavements now in general use. But there still remain the vast crowds that throng the sidewalks, the subways and the halls of office buildings. Their echoing footsteps on unyielding granite, marble, brick and concrete should stir humanitarians more than the aches of the relatively few remaining horses, or the pains of dray driver or motor-truck chauffeurs. What the cities need is rubber sidewalks before they even consider rubber streets. If there is any virtue in the rubber heel—and the great volume of business in this line indicates that there is much—rubber sidewalks would be a boon to mankind.

The general adoption of rubber tires for vehicular traffic of every sort and of rubber heels for pedestrians has to a certain degree accomplished the claims for rubber pavements and side-

walks, but several of the more important advantages of these improved street coverings cannot be secured by any other means. It will yet become common knowledge that such coverings, quite aside from their varied comforts, are economical in the long run, and at the same time it will be realized that road and sidewalk pavements used in conjunction with rubber tires and heels make for such maximum comfort as one gets in an automobile by adding shock absorbers to the best possible spring suspension.

EARLY PATENTS.

It is interesting to note that the pioneers in rubber, particularly in England, took an interest in rubber roadways.

As early as 1840, William Freeman took out an English patent for improvements in paving or covering roads, which specified a compound of india rubber combined with sawdust, sand or finely broken stone mixed in an iron cylinder, cooled and pressed. The blocks were about the size of bricks and were fastened together by rubber cement.

In 1843 Margaret H. Marshall was granted a patent for a composition which she called "Intonaco." Among other things, it was to be useful for making tessellated pavement. It was a mixture of vegetable gluten, albumin, oil, "indian rubber," and sulphate of lime.

A year later E. E. Cassell patented a paving compound consisting of chalk, mineral tar, melted rosin, liquid caoutchouc and sulphur.

In 1851 Sir John Scott Lillie patented a compound consisting of metallic substances mixed with coarse gravel and like materials, held together by bituminous compounds and cements.

While in 1856 Charles Haichois patented in England certain improvements in paving which consisted in the employment of lime, sand, asphalt, caoutchouc, gutta percha, marine glue and wood for the purpose of forming an even and durable pavement.

ANENT THE COST.

In 1913 Dr. Philip Schidrowitz, the well-known rubber chemist, delivered a lecture on the practicability of rubber pavements before the Society of Chemical Engineers of London. He went carefully into estimated details regarding the initial cost of the pavement, the expense of laying it and of its subsequent maintenance. Basing his calculations on crude rubber at 48 cents per pound, and on a composition that should be one-third rubber, he estimated that a ton of paving material would cost \$484, as compared with a cost for asphalt of \$9.68 to \$14.52, and of cement, concrete or stone of \$9.68 to \$24.20. He then compared the cost per square yard of rubber pavement with that of the materials generally in use, and found that a rubber road surface of the proper thickness would cost about fourteen times as much as asphalt or macadam and about seven times as much as granite or wood. Considering the large initial cost, he doubted the practicability of rubber paving, but with a better present knowledge of its lasting qualities and a very different crude rubber market the prospect seems very favorable.

THE INDIA RUBBER WORLD has consistently predicted that with 50-cent rubber the cost of rubber pavements on a large scale would be prohibitive, but that for certain purposes they would be sure to come to a considerable extent, and that their noiselessness and cleanliness, their freedom from rattle, jar and dust, are bound to bring them into constantly increasing favor where these advantages are most desired—as around hospitals, churches, schools, theatres, concert and lecture halls, around courts, in fine residential avenues, and even about apartment houses and office buildings of the better sort. With plantation rubber now ranging from 40 down to 25 cents per pound, Brazilian Paráís from 56½ cents down to 21, Africans and Centrals respectively from 50 and

40 cents down to 23, Mamoghas from 48 to 32 cents, standard reclaims from 40 cents down to 12, and rubber production considerably in advance of consumption, the early use of rubber pavements on a large scale appears to be in sight, for economy as well as efficiency and durability have become talking points that can be proved. The practicability of general rubber paving being once acknowledged, there is no limit to the amount of rubber that could be usefully employed.

AMERICAN EXPERIENCE.

It is to England that America must look for detailed information regarding rubber pavements, as it is there chiefly that they have been manufactured and used. America is almost entirely without practical experience in the matter.

In 1912, looking ahead to the time when low-priced rubber might make the article economically available for street pavement, the Standard Asphalt & Rubber Co., of Chicago, Illinois, now the Standard Emarex Co., manufactured and exhibited rubber paving bricks 8 by 4 by 2½ inches, having horizontal grooves along their sides. The wearing surface on top contained 25 per cent of rubber and 50 per cent of "M. R. X.," a mineral rubber, the mixture having sufficient tenacity to resist the wear and tear of street travel and to remain unaffected by weather changes. The base or underpart of these bricks was of "Sarco," a compounding ingredient of an asphaltic nature. The bricks were intended to be laid an inch apart, the spaces all around being filled with melted "Sarco." This, flowing into the horizontal grooves, formed when cooled, a dovetailed anchorage which not only held the bricks securely in place, but prevented the slipping of horses and the skidding of automobiles. A practical demonstration of the wearing quality of these bricks was given by means of an old-fashioned tread-mill in which a relay of horses, sharp-shod with heel and toe calks, walked continuously on treads of the rubber brick composition without in the least cutting or bruising them.

The cost and inconvenience of the necessary frequent replacing of planks in the boardwalk at Atlantic City led, in 1913, to a decision to cover certain sections of the walk with a preparation of rubber, and, this experiment showing satisfactory results, to extend its use over the entire length of the promenade. But this project was in the line of rubber flooring rather than of paving.

Even in France little attention has been given to rubber pavements, although in 1917 Ch. de Chaudenberg took out a patent on a composition of rubber, asphalt or bitumen for use as a road surface.

PIONEER WORK IN ENGLAND.

Rubber pavement is by no means new in London, however. When the St. Pancras Hotel was built in 1876, it was necessary to provide a roadway under it leading to the busy St. Pancras railway station. To prevent annoyance to hotel guests that might be caused by traffic noises, this roadway was paved with rubber, and it lasted for thirty years before any renewal was necessary.

Perhaps the first use of rubber for sidewalks was in Edinburgh, Scotland. In 1879 the North British Rubber Co. paved the whole sidewalk in front of its warehouses on Princes street, a very busy thoroughfare, with rubber. The walk was 12 feet wide and 50 feet long. Thirty years later, in 1909, to carry out an agreement with the city, as the firm was vacating the premises, the rubber pavement was removed. Careful examination of the rubber failed to detect the slightest sign of wear. The surface was nowhere oxidized and it seemed to be absolutely unaffected by the elements or by the millions of persons who had passed over it.

In 1881 the roadway under the Euston Hotel to the Euston station in London was paved with rubber. The material was supplied by Charles Macintosh & Co., Limited, and the total approximate cost per square yard was \$32.70, of which \$5.60 per square yard was for concrete foundation work.

When the rubber was laid down it was two inches in thickness. In 1902, after 21 years of service, the portion on the incoming road into the station was taken up and carefully examined when it was found to have worn down to about ¾-inch in the thinnest place, namely, at the incoming end, where horses first stepped on to it from the macadamized road. Other parts of the rubber were worn down to 1 inch and 1¼ inches, these places in each case being near the center of the roadway. New material for renewal was furnished by the India Rubber, Gutta-Percha and Telegraph Works Co., Limited, at \$27.09 per square yard, the total cost of renewal, including laying, was \$28.75 per square yard after credit had been given for the old rubber taken up. The average yearly cost of examination and maintenance of the original pavement had been slightly under 6½ cents per square yard.

At this time the paving of the outgoing road from the station was 1½ inches thick, and later, in 1913, after 32 years' service, was still in use, although its early renewal was anticipated. This unequal wear was attributed to the grit brought from outside by incoming vehicles, from which outgoing ones are relatively free.

The courtyard of Claridge's Hotel, the resort of crowned heads and aristocratic travelers, was paved with rubber in 1900, and thirteen years later was found to be about one inch thick. In no case had it been necessary to replace the paving, but the old slabs were relaid, as they were working out of position, caused by their not having been securely fastened down in the first instance.

In 1904 the courtyard of the Savoy Hotel in London was paved with rubber at a total cost of \$9,733. The area of the courtyard is 3,750 square feet, of which 2,195 were covered with rubber. The rubber used was two inches thick, weighing 15¼ pounds per square foot, and it was laid on a smooth concrete foundation. Rubber having advanced materially in price, the cost of the pavement laid, not including the foundation, was \$40.78 per square yard.

The traffic at the Savoy is more exacting than at Claridge's, yet after ten years' service this pavement was reported as being in very fair condition, although the slabs did not in all cases fit very closely. Certain portions had been subjected to special wear, owing to the stopping and restarting of vehicles, particularly where studded tires were used. Oil dropping from motor cars had likewise affected the surface of the rubber paving, and it had been found necessary to relay some of the slabs, possibly owing to their not fitting well.

While the conditions under which the above-mentioned pavements are used do not quite compare with those of ordinary streets, because all are under a roof and are open only to passenger vehicles mostly rubber-tired, they are in constant use and the traffic, especially at Euston station, is very heavy. That they have given satisfactory service, however, for periods of ten to more than thirty-two years demonstrates convincingly their efficiency and durability.

THE DESSAU RUBBER PAVEMENT.

An interesting experiment was made in 1913 at the junction of the New and Old Kent Roads, one of London's most crowded corners, with the rubber-capped wood blocks patented by M. M. Dessau and for which a gold medal was awarded to the inventor by the Rubber Growers' Association. As compared with the ordinary concrete foundation of wood pavement, the new method is claimed to be an improvement, as the wood blocks are imbedded in an ordinary asphalt grouting, while the rubber caps prevent the penetration of moisture into the wood.

In Mr. Dessau's system jarrah wood blocks are used with a surface cushion of rubber, held rightly in position by dovetailing. The blocks are readily movable, an advantage in these days of frequent excavations for electricity, gas, water, telephone and telegraph conduits. They interlock perfectly and give absolutely watertight joints.

PRACTICAL ADVANTAGES OF RUBBER PAVEMENTS.

The section in the old Kent road, after carrying for 295 days some of the heaviest traffic in London, amounting to 90 tons per square foot per hour for twenty-four hours, was not perceptibly worn, whereas an adjacent 4-inch wood block laid half an inch in thickness in the same time under the same load.

So successful was this initial experiment in rubber street paving in the open that in 1914 the Federated Malay States Government subsidized the laying of rubber pavements in front of its Information Agency Offices at 88 Cannon street, London, E. C. This was done in anticipation of the Fourth International Rubber Exhibition in London and to advertise the Federated Malay States as a great plantation-rubber-producing country.

It is claimed that the road foundations do not require to be nearly so strong in the case of rubber roads as with ordinary wood blocks. The reason is that the vibration of the heavy traffic on the latter causes the concrete foundations to disintegrate, even if the thickness of the concrete is in excess of the now frequently adopted twelve-inch standards.

The fact that thinner foundations can be used with rubber roads can be set against the extra cost of the rubber blocks, though even then the costs will not be equal. But the life of the rubber road may be expected to be so much greater as to more than compensate for the extra cost, apart from the advantage of silence and the prevention of skidding and side-slip of vehicles.

The latter claim may at first sight appear a somewhat remarkable one, but it is a fact that the rubber road sections that have already been laid have proved to be most effective "non-skids," notwithstanding the prediction that when wet it would become very slippery. Even when covered with oil, or when black-leaded, the rubber road does not appear to cause motor vehicles to slip. This was hardly expected when the first sections were laid down. In fact, so convinced were English insurance experts that the risk of disaster through side-slip on rubber roads was enormous that they quoted absolutely prohibitive rates when one section was being laid down, and a guaranty had to be given to the local authority. Now the premium is just the same as would be the case for any other road; in fact, it is no longer necessary to insure.

RUBBER ROADWAYS LIMITED.

In 1915 a company known as Rubber Roadways, Limited, was formed under the auspices of the Rubber Growers' Association of London, with a proposed capital of \$150,000 for the purpose of exploiting the Dessau patent on the basis of plantation companies participating in the venture. It was proposed for them to furnish annually without charge during five years one-fifth of one per cent of their output, in addition to a like further quantity at 24 cents a pound. An aggregate output of 20,000 tons a year would have been sufficient to supply 40 tons free and 40 tons at the price named. This would have amounted at that time to a free grant of 1,000 tons of plantation rubber and an additional 1,000 tons at the nominal price of 25 cents per pound.

Owing to the war the project did not fully materialize and the activities of the company ceased, but it is now proposed to revive experiments and as a beginning 400 square yards or nearly a quarter of a mile of rubber roading is to be laid on High street in the Southwark Borough of London. The company is to furnish the rubber blocks for the initial covering and subsequent repairs for a period of years while the borough is to undertake the laying and maintenance.

Meanwhile hardwood blocks have become practically unobtainable in England and are likely to be very expensive for years to come. Experiments have been made to improve methods of attachment and the block now being used is the invention of George Anderson of the Leyland & Birmingham Rubber Co., Limited. The method adopted is that of vulcanizing the rubber cap onto a steel plate; segments of that steel plate are cut and

turned down to form lugs, and it is proposed to lay the blocks directly on the cement crust of the road, embedding the lugs in that crust.

While it is believed that this style of block and method of attachment mark a considerable advance over anything previously devised, it is not contended that it represents the ultimate in methods of road paving. Suggestions for improvement are plentiful and it is anticipated that methods will be found to utilize the lower qualities of crude rubber as well as waste rubber for this purpose. In this direction point the recent experiments in Southwark Borough, London, where the paving blocks are made wholly from reclaimed rubber vulcanized at high pressure in iron molds.

REMARKS ON "UNWOVEN RUBBERIZED FABRICS."

Contributed.

THE FACT that Mr. Respass contributes the result of his experiments in a very interesting article in the June issue of THE INDIA RUBBER WORLD tempts me to indulge in the following résumé of the subject. Researches in the matter resulted in the following conclusions: First, that the rubberizing of unwoven fabrics is by no means new.

GOODYEAR'S TISSUE.

In 1853, Charles Goodyear ("Gum Elastic," by Charles Goodyear, 1853, Volume I, page 190) says:

Tissue is formed of a layer of cotton wool which is sized before it is coated with gum. The dissolved gum is combined with it by the spreading machine which makes a complete admixture of the two articles. The fibre of the cotton is not broken . . . and it is therefore . . . when corded, stronger than woven fabrics of the same weight.

GOODYEAR'S VELLUM.

This is made of a bat of cotton of about 1/4- to 1/2-inch in thickness. The gum is pressed into and intermixed with the wadding at one operation of the spreading calenders, and like other fibrous fabrics it is manufactured with great rapidity. It is made impervious to air and water with much less gum than the woven fabrics. Besides, the yarn is not liable to peel off as easily as it does in other fabrics. It is for most purposes the cheapest as well as the best of the non-elastic fabrics and when corded bids fair to supersede the coated cloths entirely for many purposes, particularly . . . for the heavier uses for india rubber canvas. It is made when desired in imitation of various kinds of morocco, kid and buff leather, and of different thicknesses and degrees of strength according to the thickness of the wadding.

GOODYEAR'S CORDED FABRICS.

Tissue and vellum are made very strong (and are torn with difficulty) when corded with silk, thread, tissue or spun yarn, for the same reason that muslins and other woven fabrics are strengthened by being barred or corded with threads stronger than those of which the cloth is made.

The different fibrous fabrics, when corded in this manner are even stronger than india rubber fabrics that are made of woven cloths. The uses of these fabrics are the same as those of tissue, vellum and vegetable leather, but on account of their great strength are applicable to a great many purposes for which those fabrics would not answer, such as . . . tarpaulins, coach cloths, etc.

As far back as 1825, Thomas Hancock patented a substitute for leather which consisted in saturating and combining various fibrous substances with a solution composed of caoutchouc, in which he mentions the use of a layer or layers of carded cotton. Incidentally in the same year he took out a patent which covered the mixing or covering fibrous substances such as hemp, flax, cotton, wool, etc., with the juice of a tree called the "Hevea."

In 1854, James T. Stoneham secured an English patent which covered the application of caoutchouc compounds in solution as applied to any felted fibrous matter, the rubber being applied by "forcing it into the material by pressure of rollers similar to calender rollers."

Coming down to more recent times the following is to be noted: Clark's patent felt made from rubberized cotton fleece.

("India Rubber, Gutta Percha and Balata," Brannet, 1900, page 208.) In the same line of endeavor may be cited the following: Rubberic, which is fiber blended with india rubber in solution, stretched and dried, used chiefly in making tires and mechanical goods, patented by William Golding, Manchester, England; and Wolfert, another English product, which is felt impregnated with a waterproof substance. ("Crude Rubber and Compounding Ingredients," Pearson, pages 135 and 139.)

Moreover, there should be taken into account the processes employed in making felt shoes several times essayed in New England with more or less success, all of which were based upon the impregnation of unwoven fabrics with rubber shaped and vulcanized.

It would seem, therefore, that the use of cotton bats in connection with india rubber applied either in solution or as a dry dough had been pretty thoroughly described. Special machines may of course assist in the production of a better or a cheaper product and the writer trusts that such is the case. But the product itself in any form which he has described would seem to be available to any who chose to manufacture it.

NOTE.—As our contributor almost says, it is accomplishment that counts, not suggestion, or experiment. Pneumatic tires were discovered long before they were made commercially. The man who first makes anything on a commercial scale is oftentimes the actual inventor and that in spite of previous predictions, suggestions or patents that ended in failure.—THE EDITOR.

RUBBER TRADE INQUIRIES.

THE inquiries that follow have already been answered; nevertheless they are of interest not only in showing the needs of the trade, but because of the possibility that additional information may be furnished by those who read them. The editor is therefore glad to have those interested communicate with him.

(717.) A correspondent inquires where in the United States Castilloy tapping-knives may be purchased.

(718.) An inquiry has been received for the address of manufacturers of paper transfers for marking inner tubes.

(719.) A reader requests information concerning a permanent, glossy, non-crackable varnish for hot-water bottles.

(720.) A subscriber inquires for the names and addresses of manufacturers of rubber tape suitable for patching canoes and small boats.

(721.) A correspondent desires to place with an American manufacturer an order for Hevea tapping tools.

TRADE OPPORTUNITIES FROM CONSULAR REPORTS.

Addresses may be obtained from the Bureau of Foreign and Domestic Commerce or its district or cooperative officers. Request for each should be on a separate sheet, and state number.

(29,185.) A firm in Norway desires to purchase and an agency for sale of rubber goods, tires, etc. Cash against documents.

(29,188.) A firm in France desires agency from manufacturers for sale in France and Morocco of dentists' and druggists' supplies.

(29,190.) A man in Switzerland desires to purchase or secure agency for sale of rubber tires, tubes, artificial leather, etc.

(29,318.) A druggist in Algeria desires to purchase pharmaceutical rubber goods of all kinds. Correspondence may be in English.

(29,322.) A merchant in Australia desires to purchase canvas shoes with rubber soles, white and gray, all sizes. Thirty days' sight draft, documents attached.

(29,346.) A firm in Spain desires agencies on commission basis for sale of rubber stamps. Correspondence in Spanish.

(29,359.) A firm in Norway desires to purchase and secure agency for sale of rubber shoes. Cash against documents.

(29,403.) A firm in Norway desires to purchase and an agency for sale of rubber goods and insulating materials. Quote

f. o. b. New York. Cash against documents at destination.

(29,413.) A firm in Norway desires to buy rubber overshoes. Cash against documents.

(29,419.) A firm in New Zealand desires agencies for sale of artificial leather.

(29,435.) A man in Switzerland desires to purchase pneumatic tires. Correspondence may be in English.

(29,443.) A firm in Brazil desires agencies for the sale of rubber tires and rubber goods. Correspondence may be in English.

(29,452.) A firm in Norway desires to purchase transmission belting. Quote f. o. b. American port of shipment. Cash against documents.

(29,456.) A firm in Italy desires to secure agencies for the sale of tires, etc.

(29,466.) The representative of a firm in Scandinavia, now in this country, desires to secure agencies for the sale in Scandinavian countries of all kinds of rubber manufactures, including galoshes, tires, hose, gloves, hot-water bottles, heels and soles, raincoats, and mechanical rubber goods.

(29,475.) A company in Norway desires to purchase and an agency for the sale of tires. Quote f. o. b. New York. Cash against documents at destination.

(29,494.) A firm in Norway desires to purchase rubber and rubber goods. Payment against documents at destination.

(29,311.) A company in Norway desires to buy rubbers and rubber heels; also, an agency for sale of same. Quote f. o. b. New York. Cash against documents at New York or destination.

(29,542.) A merchant in Italy wishes to purchase or secure an agency for the sale of dentists' rubber goods, hospital and orthopedic supplies, and other rubber goods. Payment on receipt of goods. Correspondence may be in English.

(29,547.) An importer in Italy desires to purchase suspenders and garters. Payment through American bank. Correspondence in Italian or French.

(29,586.) A commercial agent in Belgium wishes to purchase and secure an agency for the sale of insulated cables and wires for electric wiring, etc. Correspondence in French or Flemish.

(29,589.) A traveling salesman of Smyrna, Turkey, in the United States for several years, sailing soon for the Near East, desires to secure the representation of rubber goods in Turkey, Greece, the Balkans and Egypt.

(29,617.) A firm in Norway desires to purchase an agency for the sale of rubber and rubber goods. Cash against documents.

(29,656.) A firm in Belgium desires to purchase or act as agent or receiver on consignment for electrical insulating material.

(29,660.) A company in Italy desires quotations on 25,000 to 30,000 square yards of waterproof covering for wagons, to be standard quality; guaranteed samples requested. Correspondence may be in English.

(29,682.) A firm in Brazil desires to purchase cables and insulating material. (Refer to File No. 117,955.) Correspondence in Portuguese.

(29,687.) A company in India desires to purchase electrical cable-making machinery and raw rubber, insulation material, etc. Terms, cash against documents.

(29,692.) Proprietors of a company in Denmark now in this country seek exclusive agencies for sale in Denmark of rubber goods, including tires, hose, raincoat, physicians' and surgeons' sundries, galoshes, toys, etc.

(29,695.) Furniture dealer and manufacturer in Australia desires to purchase billiard rubber. Quote f. o. b. American port. Payment, sight draft with documents attached.

(29,711.) The purchasing agent of a firm having large department stores in several different countries, now in the United States, desires to purchase for immediate delivery fountain pens, rubber goods, etc. Cash or terms suitable to seller.

Tire Rebuilding and Repairing.

REBUILDING.

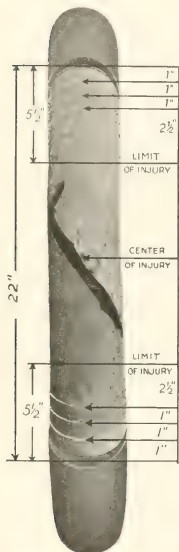
THE RAPID GROWTH in popularity of automobilism has developed a wide-spread demand among tire users for dependable rebuilt tires, tire repairs, and devices such as tire reliners, blow-out patches and other means for extending the usefulness of tires. In response to this demand innumerable tire repair plants are to be found on every hand. Some of these are developing their facilities to enable them to rebuild tires and

a number of companies are now organized and operating plants in various sections of the country, exclusively for rebuilding both wrapped tread and full molded tires.

The stock of repairable tires is selected from the standard makes of high-grade guaranteed fabric tires. Such old tires are stripped down from their road-worn condition to a basis of sound fabric plies, and after being repaired, are rebuilt with new rubber and fabric, or salvaged fabric, into a serviceable product salable as legitimate low-priced merchandise.

Restoring old tires to a serviceable condition by repairing is, of course, nothing new. The enormous number of tires in use and the desire on the part of their owners to derive the utmost of tire mileage to compensate for the high cost of motoring, form the basis of a great national business in the United States.

Previous to the abnormal conditions due to the demand for munitions of war, motorists generally did not appreciate the possibilities of expert tire rebuilding, but when convinced through necessity that it is practical economy and that the last thousand miles of tire service is in fact the cheapest, they accepted it as they have the factory-rebuilt automobile. Tire rebuilding is today an



(The R. I. Goodrich Co.)

METHOD OF MAKING SECTIONAL REPAIR.

essential and profitable business, depending fully as much on ability to judge whether casings are worth the necessary repairs as on skill in performing the work.

SELECTING TIRES FOR REBUILDING.

The first selection of road-worn tires for rebuilding is done by the rubber scrap dealers who specialize in old tires and who also salvage sound tire fabric from unreparable old tires for use in rebuilding such as are repairable, and for manufacture into tire reliners, blow-out patches, etc. The final selection requires the expert judgment of a man familiar with tire construction, and able to diagnose structural weaknesses in order to eliminate all casings that cannot be turned into serviceable rebuilt tires.

TYPICAL METHOD OF REBUILDING TIRES.

Different methods have been developed for successfully rebuilding tires, both wrapped tread and full molded. The work consists essentially of four parts: (1) tearing down, (2) repairing,

(3) rebuilding, (4) curing. Two typical processes are here given.

One method is to tear apart the old tire, layer by layer, and use the material thus obtained (except the old rubber) in building a



(Attelberg Tire Equipment Co.)

THE CUTTING-DOWN PROCESS.

new tire, cutting out the damaged portion of the fabric and building up as in building a new tire of new material, except for the use of the beads and the old fabric bases. This method is effective but the cost is very little lower than where new fabric is used.

A more economical and practical way is the following, recommended by a concern which has developed the system of molding described.

TEARING DOWN.

An old tire, carefully selected, having a good body with no rim-cuts, is hung on an ordinary tire core and the center of the tread is skived down to the fabric for a space of about six inches in length. The tire is then put on a machine having an interchangeable tool which cuts through the outside ply of fabric from the tread to the bead point. The tire is then taken off, turned around, and the fabric cut from the center to the opposite bead. This leaves the outside ply of fabric cut through from bead point to bead point. This outside ply, including the tread, is now peeled back for a distance of four or five inches and stripped from the tire with the assistance of hand-tools.



(Hibbs Rubber Co.)

BUILDING UP REBUILT TIRES.

The object in removing the first ply of fabric from the tire to be rebuilt is to minimize the amount of labor in preparing the old tire for rebuilding and to secure the proper vulcanization of the rebuilt tire. The first ply of fabric, generally full of sand, etc., is removed before the carcass or body of the tire is cemented and the new tread applied.

REBUILDING.

The body of the old tire, after removal of the tread and first ply of fabric, is examined and if there are any blow-outs or weak places in it, these are stripped off as for an ordinary sectional repair.



(Attending Tire Equipment Co.)

STITCHING DOWN THE TREAD.

The tire then goes to the building-up department, where it receives two coats of good vulcanizing cement and is allowed to dry, after which the blow-outs and weak places are repaired with reclaimed tire fabric. Any repairs made on the inside of the tire are made on the bias, giving the ends of the repair fabric the appearance of an ordinary splice. The tire is then mounted on a collapsible core, and one ply of reclaimed fabric is applied on the outside to replace that removed with the old tread. The cushion gum, bead fabric, breaker fabric and tread gum, all of new material, are then applied in the same manner as in building a new tire.

CURING.

The tire is now ready for curing in an adjustable tire mold. An air-bag is inserted in the tire and it is placed in the mold, the upper half is lowered to the proper place, the air-bag inflated to 150 pounds pressure and steam turned into the jacketed mold. After a cure of fifty minutes at sixty to sixty-five pounds the steam is turned off and water is circulated through the molds to cool them. The upper half is then raised and the tire is taken out. The air-bag is removed and the slight over-flow at the



(Hill Rubber Co.)

CURING IN ADJUSTABLE MOLDS.

edge of the tread trimmed off with a small V-shaped push-knife. The tire is then finished with a coating of talc.

Different brands of tires vary in size, one make will measure 64 inches from bead to bead, while another brand of the same

size will measure 7 or 7½ inches from bead to bead. Therefore, adjustable tire molds are made that give a perfect cure on either a full or scant size tire of a given size. In curing by the open-steam, wrapple systems this variation in the size of tires is easily overcome, but in the mold cure, the tire must fit the mold or it will not be perfect. If the tire is too large, it will be wrinkled or mold-pinned; if too small to fill out the mold there will be insufficient pressure on the tread.

The adjustable mold is made in two pieces—the lower part curing one side and the tread, while the upper part fits down into the lower and cures the opposite side of the tire, a complete cure being effected in one operation. In curing a scant size tire, the mold is closed completely, while on a full size tire it is left slightly open. Both the upper and lower cavities contain live steam, but valves may be installed in the steam line, so as to cut off the steam in either cavity for curing one side of the tire only, as in the case of a large rim-cut or side-wall repair.

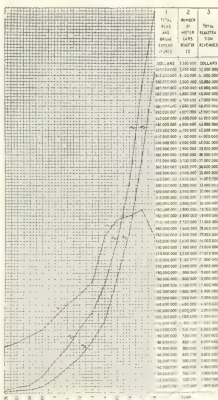
(To be continued.)

ROAD BUILDING AND TIRE BUILDING.

A COMPARISON of American road building and motor vehicle production during the past nine years vividly shows the necessity of enormous highway expansion. In 1910 approximately 7 per cent of this country's highways were improved,

and even today improved roads are estimated at only 15 per cent of the total mileage. But while good roads were being 'doubled,' the number of automobiles has been increased some seventeen times. Within five years the main traveled roads will be clogged with traffic, and in figuring highway capacities and building new roads the ratio of increasing traffic must be considered.

Highway building is making great progress to be sure, but it is only in its infancy, and when the expenditures now authorized by the several States and the Federal Government have been exhausted the work will be only fairly under way and tremendous further outlays will be required. More has been accomplished in the Eastern States than elsewhere, but the Middle West and even the South are rapidly awakening to the need. It is probable that the people of thirteen States will have



The total road mileage of the United States is about 2,450,000 miles. With a total registration of 6,146,617 motor vehicles there is an average of 2.5 motor cars for every mile of public road. There is an average of one motor car for every 2 persons in the United States, California and Nebraska average one car to every 2 persons. Iowa and South Dakota, 1 to 8. Alabama, 1 to 51. Louisiana, 1 to 46. Arkansas, 1 to 42.

voted in favor of bond issues aggregating more than half a billion dollars for better highways before next winter. Illinois, Pennsylvania, Michigan and Utah have already authorized issues amounting to \$162,000,000, while the legislatures of Montana, Oklahoma, Alabama, California, Missouri, Georgia, Minnesota, Texas and West Virginia have recommended that the people vote this year for good roads appropriations totaling \$371,000,000. The overwhelming vote in the first four States mentioned seems to indicate a successful outcome in the other nine, and

doubtless other States will fall into line, all of which is of vital interest to tire manufacturers.

In proportion to populations, both England and France have made and are making more progress than America. Congress has appropriated \$275,000,000 for expenditure up to and including 1921, for improvement of the 2,500,000 miles of roads in the United States. France plans to spend \$152,000,000 on her national system of highways comprising 65,000 miles, while England has appropriated \$50,000,000 for expenditure on her 150,908 miles.

England has 239 citizens to every mile of road; there are 108 Frenchmen to every mile, and in America there are only 42 persons to the mile. According to these figures the highway system of the United States will not equal the ratio of French mileage to area until we have 5,000,000 miles of highway, while 7,500,000 miles will be necessary to meet the English ratio.

STRAIGHT-SIDE TIRES FOR FOREIGN MARKETS

It is now a conceded fact that the mileage obtained from a straight-side tire is normally greater than that obtained from a clincher of equal size. This is because the absence of a bead permits a given weight of car to be carried on a larger volume of air or inside diameter than does a beaded or clincher tire of the same cross-section. It has played no small part in increasing tire guaranties from 3,500 to 5,000 and even 10,000 miles or more.

These facts are generally admitted in the United States and, subject to demonstration, abroad just as they were here in the beginning. The prejudice of foreign buyers disappears when they are convinced that a straight-side tire will give more mileage at a given cost than a clincher tire. Therefore the problem of popularizing straight-side tires in foreign markets hinges on two things—the attitude of competitors and the ability to get replacements.

It may be conceded as a fact that the Continental European tire manufacturers will do everything they possibly can against the straight-side tires for the reason that they are better equipped to build clincher tires. The European car manufacturer will also combat the straight-side tire because it is an American development, and he will find the European tire manufacturer helping him on every hand. There will also be the European tire dealer to aid them, so that the elimination of the clincher tire will not be accomplished without a great deal of propaganda work and can never be accomplished without united action upon the part of the American car and tire manufacturers.

Whether or not this can ultimately be brought about, depends upon one thing only—the ability of the purchaser of an American car equipped with straight-side tires to get replacements wherever he may go with his car. This means practically universal distribution of straight-side tires, and is a problem which belongs primarily to the tire manufacturer, although looking at the question in its broadest sense, it is one of mutual interest to him and the automobile manufacturer.

The equipping of American cars for export with American clincher tires does not solve the problem, for these are inch-size tires and not interchangeable on the same rim with European millimeter-size tires, with the exception of 34 by 4½ and 880 by 120 m.m., the former, however, being made only with straight sides. Moreover, it is as difficult in most foreign markets to obtain an inch-size clincher as an inch-size straight-side tire. That the problem is susceptible of solution, however, was recently indicated in Argentina, where a change from 100 per cent clincher tire equipment, metric sizes, to 100 per cent straight-side equipment, inch sizes, was made without the loss of a single sale. This was brought about through co-operation with tire manufacturers who were notified in advance so that when the cars arrived there was already a stock of inch-size, straight-side tires to be had.

The same result can be obtained in all markets, with the possible exception of Continental Europe, through the co-operation of American tire and automobile manufacturers, as evidenced by distribution which the more aggressive tire manufacturers have already effected throughout the world.

In Continental Europe it is doubtful if this change can be brought about for some time, because the local manufacturers are at home and we are meeting them on their own ground, where they have every patriotic and local element supporting them, but it could doubtless be done even there through united team work of all American manufacturers of cars and tires. The straight-side tire is a better proposition for the ultimate purchaser, and if we can give him the same replacement service that is afforded with the clincher tires, we have helped him and thus have helped ourselves.

So long as some of our American manufacturers equip with clincher tire equipment, so long must all equip with clincher tire equipment. Not one of us would be willing to sacrifice his individual market and see some other American manufacturer take it, because this would not bring about the desired result. Team work and the united effort of the American manufacturers can accomplish this result while the efforts of one alone would be unavailing.

USE TIRES OF RIGHT SIZE.

A nation-wide campaign will soon be launched by tire manufacturers to educate automobile manufacturers and dealers in the economic importance of equipping cars with tires of the right size. At the same time an effort will be made to check the wasteful practice of carrying too many "spares." This movement was inspired by the reports of the Commercial Economy Board to the effect that out of 21 cars in a test only seven were equipped with tires of the size recommended by tire manufacturers.

Car makers are now recognizing the principle that tire mileage is governed almost as much by the weight of unsprung parts that bear directly on the tire as by the total weight of the car.

Tire manufacturers will endeavor to drive home to the makers and distributors of cars that the thing of first importance in the selection of tires is size in proportion to the weight of the loaded car; and second, size in proportion to the distribution of weight between sprung and unsprung parts. Selection of tires in sizes recommended by manufacturers will reduce the number of spares necessary to carry on extended tours. This will be emphasized in the educational campaign of the manufacturers.

METRIC SIZES AND THEIR EQUIVALENTS.

Metric Sizes.	Approximate Size in Inches.	Metric Sizes.	Approximate Size in Inches.
550 x 85	22 x 2½	910 x 100	36 x 4
650 x 65	26 x 2½	765 x 105	30 x 4
760 x 65	28 x 2½	815 x 105	32 x 4
750 x 65	30 x 2½	875 x 105	34 x 4
800 x 65	32 x 2½	915 x 105	36 x 4
830 x 65	33 x 2½	760 x 120	30 x 4½
860 x 65	34 x 2½	815 x 120	32 x 4½
780 x 80	28 x 3	820 x 120	32 x 4½
750 x 80	30 x 3	850 x 120	33 x 4½
800 x 80	32 x 3	875 x 120	34 x 4½
750 x 85	28 x 3¼	880 x 120	34 x 4½
750 x 85	30 x 3¼	920 x 120	36 x 4½
800 x 85	32 x 3¼	1020 x 120	38 x 4½
800 x 85	34 x 3¼	1080 x 120	42 x 4½
710 x 90	28 x 3½	820 x 135	32 x 5
740 x 90	30 x 3½	815 x 135	32 x 5½
810 x 90	32 x 3½	880 x 135	34 x 5½
840 x 90	32 x 3½	895 x 135	34 x 5½
870 x 90	34 x 3½	920 x 135	36 x 5½
910 x 90	36 x 3½	935 x 135	36 x 5½
960 x 90	38 x 3½	895 x 150	35 x 6
1000 x 90	40 x 3½	920 x 150	36 x 6
1000 x 100	30 x 4	935 x 150	37 x 6
1000 x 110	32 x 4	1000 x 150	40 x 6
1000 x 120	34 x 4	1050 x 150	42 x 6

From "The Tire Rate Book."

¹From a paper by D. B. Richardson, foreign sales manager of the Studebaker Corp., read at the Automobile Export Managers' convention held in New York City, March 7, 1919.

SALVAGING AUTOMOBILE TIRE FABRIC.

A DISCARDED ROAD-WORN AUTOMOBILE TIRE CARCASS averages half rubber composition and half cotton fabric. In the best makes the fabric is Sea Island and Egyptian cotton and much of it is sound and in usable condition for remanufacture.

It is readily salable at a higher price than the old rubber portions. The possibilities in using salvaged tire fabric have led to the development of two profitable lines of business. Reclaiming or "pulling" old tire fabric is comparatively a recent addition to the business of the scrap rubber dealer. Many tons of usable fabric are recovered daily and find ready



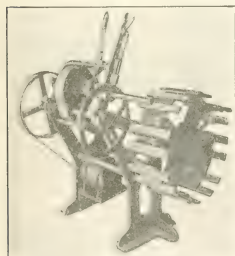
THE R. & D. FABRIC PULLER.

sale to the tire repair and rebuilding trades, and to manufacturers of tire reliners, blow-out patches, etc.

Various power devices are employed for stripping or pulling tire fabric which not only lessen the labor cost but produce a uniform product with the rubber wholly on one side of the fabric while the opposite side is entirely bare. Successful machines for this purpose are shown in the illustration and the operation of one is described below.

METHOD OF STRIPPING TIRE FABRIC.

The bead points are first trimmed off the old tire from which the fabric is to be stripped. The work is done with a six-inch knife. The tire is next turned inside out and slipped over the



HIBBS' FABRIC STRIPPER

expanding drum of the stripping machine. By means of a hand-crank the drum is expanded until the tire is held firmly. One ply of fabric is then cut through clear across from bead to bead. One edge of it is peeled back a short distance by means of a pair of pincers until the end will reach once around the fabric shaft of the machine. This lever is thrown forward, bringing the shaft near the tire, the free end of the fabric is wound round the shaft and the clutch engaged. After the shaft has made a few turns, it is drawn away from the tire to allow room for the accumulation of fabric on the shaft. While the fabric is being removed from the carcass, should it tear or a large blow-out be reached, the clutch is disengaged and the fabric around the bad place

is peeled back with the aid of pincers. The operation of stripping the tire is continued until the level of the beads is reached.

REMOVING THE BEADS.

At that point the tire is taken from the machine and the beads removed on a special machine. This machine is simple of operation and consists of a rigid stand, somewhat like a tire-building machine, with a locking device to hold the tire securely, and an arm actuated by a hand-lever. This arm is provided with an interchangeable tool, of which one end is ground for removing beads, and the other for cutting through the treads and first ply of fabric. The bead-removing tool engages the exposed bead, pushing it away from the tire for a space of about twelve inches, after which it is easily pulled from the tire.

After removal of the beads the tire is returned to the stripping machine and the remaining plies stripped as described, down to the ply next to the tread. This ply, usually filled with sand and dirt, is worthless for reuse, and is discarded with the attached tread and side wall rubber, as junk.

The cost of stripping fabric by machine is a relatively small item in view of the amount of possible output and profit.

GERMAN WAR TIRES¹

THE FOLLOWING ACCOUNT of what the Germans were obliged to substitute for rubber tires on their army motor vehicles relates particularly to the tire situation in Belgium as affected by the blockade.

SUBSTITUTES FOR RUBBER TIRES.

The loss of rubber was a serious blow. While the Allies ran all their trucks on rubber tires, and even had automobile-hauled gun carriages rubber shod, the tire dimensions going as high as 60 by 9 inches, it was a rare occurrence to see a German truck with rubber tires. Of the hundreds of abandoned or captured German trucks I examined in Belgium, not more than a dozen had rubber tires.

The stories of artificial rubber appear to be a myth. The majority of these trucks had very thick wood rims² mounted on the rim of the wheel around this was a light steel rim which made contact with the road. Another equally common method was a series of rubber blocks, each of which was set in a pair of cups mounted respectively on an inner and an outer rim. The inner rim was fixed and the rim had a certain amount of elasticity. In this case, as in the first instance, a steel rim was in contact with the road, the rubber giving a cushioning effect without being subject to friction with the road surface.

In some instances this system of rubber blocks between two steel rims was applied to touring cars. The result, however, was not at all satisfactory; speed had to be kept down to 12 miles an hour, the vibration was tremendous, and there was a decided tendency to skid.

Sufficient pneumatic tires were obtainable to supply the cars used by the higher staff officers at the front, but the scarcity of rubber and the impossibility of finding a substitute for pneumatic tires restricted the use of touring cars to officers in the field.

CONVERSION OF A GERMAN TIRE FACTORY.

Because of the special nature of its requirements, the balloon companies had their own main supply depot, independently of the airplane service. It was one of the accidents of war that the factory used by the Continental Tire Co., of Hanover, until August, 1914, was taken possession of by the French, who enlarged it and later turned it over to the American Air Service as a balloon depot. Before the fighting this one-time German rubber factory had become the biggest hydrogen-gas producing center in the world, with an output of 500,000 cubic feet per day. During the active period this depot sent out 1,650 tons of special balloon material.

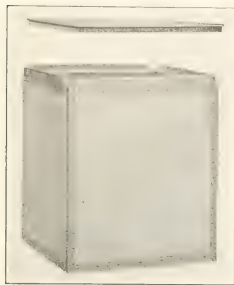
FROM SALOONKEEPING TO TIRE SALES AND REPAIR.

After July 1, thousands of excellent store locations now occupied as bar-rooms will be released for other business purposes. In Ohio alone the number is estimated at 6000. Tire manufacturers believe that liquor men who enter the retail tire and accessory field are undoubtedly making a wise choice and predict that hundreds of them will do so.

¹ By W. F. Bradley in "Automotive Industries."

WOODEN PACKING CASES AGAIN FOR CRUDE RUBBER.

DURING THE WAR the baling of plantation rubber for shipment from the Far East became a patriotic and necessary expedient to conserve ship tonnage. The plan was effective



A VENESTA CASE.

in that it resulted in a saving of 25 per cent in cargo space and about 20 per cent in weight, and was carried out with a measure of success, yet it was by no means popular with American rubber manufacturers. While it was found that in most instances baling afforded adequate protection, it seemed to have a deteriorating effect on the rubber, and in most cases it greatly increased the tendency of the sheets to stick together, causing considerable difficulty in separating them.

It is not surprising, therefore, that planters are again employing wooden packing cases at the solicitation of their patrons. The standard size measures 19 by 19 by 24 inches, which is equivalent to 5 cubic feet. Each case is securely nailed and banded with iron to withstand the long journey and severe handling. The average net weight of a case of first latex crêpe is 150 pounds, and that of smoked sheet 200 pounds, the tare in both cases averaging 20 pounds. A ship ton is equivalent to 50 cubic feet, and as a case of rubber measures 5 cubic feet there are usually 10 cases of rubber to the ship ton.

Experience has shown that cases almost cubical in shape and of the size adopted withstand many hardships better than oblong or larger cases. When filled they are relatively light, very strong and well adapted to Eastern methods of transport. Moreover, the weight of rubber per case is not sufficient to cause much sticking together.

The three-ply wooden cases with the grain crossing at right angles, such as the well-known Venesta, are probably the most suitable. They are shipped flat, put together on the estate, and held together by metal straps bent around all edges and riveted. Interior battens at top and bottom give them great strength and rigidity with extreme lightness. They can be opened at either end, and on taking off the lid the battens are also removed so that nothing remains to obstruct turning out the rubber. Such cases of the same internal capacity as sawed wood cases weigh from 40 to 60 per cent less and save from 10 to 15 per cent of the rail and ocean freight on the packed cases. They are smooth inside, practically dust-proof and air-tight, insuring minimum oxidation of the rubber and the best obtainable price for it. If desired they can be perforated with holes for ventilation without any loss of strength.

Well-seasoned Japanese Momi cases are satisfactory if fully $\frac{5}{8}$ -inch thick and before shipment they should be fastened securely around both end-edges and also around the middle, both endwise and crosswise, with hoop iron, care being taken that the nails used do not damage the rubber. Now that there appears to be no prospect of cases being permanently discarded for bales, the numerous suggestions that cases be devised having some practical method of opening the lid for inspection at various ports and permitting reshipment without the removal

of binding iron and nails or damage to the case will probably receive more attention.

Most estate managers now realize how important it is that all wood chips, saw-dust and splinters, which might become imbedded in the rubber, be removed from the packing cases before filling, also all dirt, leaves and twigs from the rubber itself. They are also aware that unless the rubber is thoroughly dry before packing, decomposition may ruin the entire caseful during transit and the shrinkage may exceed the 2 per cent allowed by sellers. This shrinkage, together with rough handling, causes the rubber to shake down until there is a certain amount of play inside the case. If the case is not of smooth planed wood, splinters will become imbedded in the rubber, and this play has even been known to knock out the sides of a case in rough handling. It has often been suggested that case be lined with various materials such as paper, muslin, cheesecloth, jackinette or straw matting, but experience has condemned them all. Of the various packing materials to avoid splinters and exclude extraneous dirt, probably the best is heavy waxed paper. It is preferable, however, to omit it, and if the cases are well-constructed of planed lumber and the rubber is thoroughly dry, none will be needed.

On well-supervised estates the packing is very carefully done, the sheets being laid flat and not folded. They are spread quite close to the sides of the case and as many put in as can be packed without undue pressure, talc or soapstone being used freely between the sheets of rubber to avoid moisture from sweating.

Well-cured, thoroughly dried and carefully packed rubber will reach its destination in ordinary unventilated cases, but if any tendency toward tackiness exists at the time of packing, transit in such cases may cause the whole consignment to ar-



PLANTATION RUBBER IN CASES.

rive in a moldy condition. Air-tight cases are therefore dangerous and a moderate amount of ventilation appears to be desirable.

CONSOLIDATION IN THE LITHOPONE BUSINESS.

A new organization capitalized at 10,000 shares of no par value and an authorized bond issue of \$500,000, has been formed in St. Louis, Missouri, by the consolidation of the Collinsville Zinc Co., the Potter-Barrell Process Syndicate, and various mining interests—whose names are at present unannounced. The incorporators and officers of the new company, known as the Collinsville Zinc Corp., are as follows: Otto M. Meister, president; Robert W. Barrell, treasurer; R. W. Wild, secretary; directors, Henry W. Schultz and Joseph Carr. The concern will manufacture lithopone, barium, lead, zinc and arsenic salts, pigments, and insecticides.

RECLAIMING HARD RUBBER.

By Hancock Hashkus.

SOFT RUBBER in its great variety of forms as scrap, trimmings, and worn out articles, has been reclaimed, recovered or regenerated almost from the time of Goodyear. Hard rubber scrap, however, for a long time was neglected, first because it was mechanically difficult, and second because none of the common acid or alkali processes were adapted or, rather, needed in its reclamation. It therefore happened that while old boots and shoes, belting, hose, and tires were collected, and a huge business built up on their recovery, hard rubber scrap was not sought for.

Hard rubber scrap comes in a great variety of shapes. Worn out battery jars, bases for truck tires, electrical sheets and rods, valves, druggists' and surgical fittings, etc., etc. Before proceeding to a discussion of the methods of turning hard rubber scrap into dust, a word concerning the use of this dust is in order.

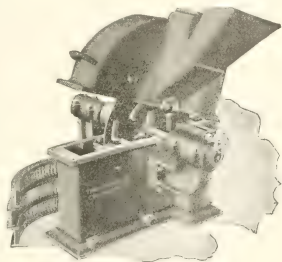
Hard rubber dust is not desulphurized or devulcanized. Nor is this necessary, for the sulphur contained in it is in no sense a handicap. Indeed it is useful for revulcanization. The dust is simply added as if it were so much whiting and under pressure and heat it continues to be hard rubber but shaped and pressed into solid form.

For illustration take one of the well-known "dust compounds." It is: 5 pounds of Pará rubber, 20 pounds of hard rubber dust, 5 pounds of sulphur, and 3 pounds of substitute.

Of course, this is only one of hundreds, some containing much dust, some little, some calling for substitute and some for vegetable oil.

In soft rubber, hard rubber dust is of no use at all, but in hard rubber it is of prime importance, especially for electrical, physical or chemical purposes, or when it is to be made into objects demanding a high degree of polish.

In all of the above the dust must contain neither metal parts nor grit, and the best hard rubber scrap should be used, as it contains the highest percentage of rubber and no fillers such as chalk. The scrap should therefore be sorted by experienced

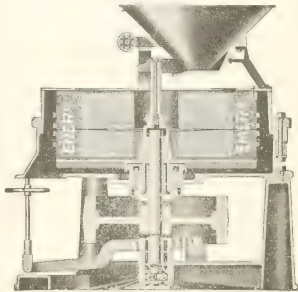


DAY'S DUST GRINDER.

hands before being ground. The best results are obtained with powerful, short-built mills provided with smooth, not ribbed, rollers. Regardless of the grinding system resorted to, the operation always results in the rollers of the grinders giving off more or less metallic powder. To pass through various sieves the hard rubber dust obtained, even if one of them is magnetic, does not remove all impurities. Sand or grit particles pass through sieves. Washing hard rubber dust means the loss of much of the valuable material; further, the drying of the washed dust requires much care and time, and there is always the risk that sufficient humidity will remain to increase the porosity of the finished product.

The best method of removing impurities is probably to use a combination of ventilators and sieves in a dust-tight room. The

following is a description of one of these fanning installations in a room ten feet high and fifty feet long, the ceiling, walls and floor zinc covered. In the room are two longitudinal partitions, reaching from the ceiling to the floor. At the point where the hard rubber dust enters, there is a sieve, with a wooden frame covered with zinc, the sieve running on iron rollers along an iron track. It is provided at the bottom with small openings for the rubber dust. As the dust leaves the sieve it is caught by a fan which disperses it throughout the room. The heavy particles such as metal and sand, immediately fall.



THE STURTEVANT MILL.

while rubber dust is blown farther along, where it settles.

The room has two observation windows, through which it can be ascertained that the dust has settled, it also has an air-tight door through which the workman enters to remove the dust, and finally it has a half-dozen slatted windows through which the air forced into the room by fans can escape. It does not take much experience in operating this dust room to discover where the finer dust deposits. Several qualities of hard rubber dust can be obtained simultaneously. Rubber dust not sufficiently fine can be reground and no dust is lost. The room described has been in use for a number of years, works almost automatically, and gives good results.

SECOND PAN-AMERICAN COMMERCIAL CONFERENCE.

This congress of 1,181 delegates representing the official, unofficial, commercial, financial and business life of all of the American republics, held in Washington, D. C., June 2 to 6, inclusive, under the auspices of the Pan American Union, was the most successful series of meetings of their kind ever held on this continent. Never before has such a conference been so comprehensive in topics discussed, so fair to all the countries participating, nor so productive of practical results.

Among the principal results of benefit to Latin America which will be early outgrowths of the conference are better steamship facilities, extensive railway, highway and hotel construction; improved commercial methods and regulations; extension of banking connections, ample loans and credit facilities; safeguarding patents, trade-marks and copyrights; extension and simplification of the parcel post and improvement of news and cable service; similarity of consular office administration, invoices and fees; revision and permanency of tariffs, insurance and packing; encouragement of vocational training for Pan American trade; and arrangements for holding the Second Pan American Financial Congress in Washington in January, 1920.

The complete proceedings, which will be the most up-to-date handbook on Pan American commerce yet published, are being printed and can be obtained on application to the director general of the Pan American Union, Washington, D. C.

BUY WAR SAVING STAMPS—BUILD FOR AMERICAN PROSPERITY AND YOUR OWN SUCCESS

BUILDING BIAS BINDING.

IN THE MANUFACTURE of tennis shoes, as well as other shoes having uppers of duck, canvas or other fabrics, a very considerable amount of binding is used to cover the raw edges to prevent unraveling and to give finish to the goods.

Some of these bindings are cut the straight way of the cloth, others are cut on the bias, that is, at an angle of 45 degrees to the weft and warp threads of the fabric. The advantage of these bias bindings is that they lie flat when bound around curved edges or when turned around corners, as is necessary when binding the top of a shoe and continuing down the sides of the lacing opening.

Simple as this product seems, there are details in its manufacture which producers guard closely, and decline to divulge, for there are manufacturers whose sole business is to make these bindings of various materials, and of colors to match the textiles with which they are used.

THE METHOD OF MANUFACTURE.

The illustrations show the manner in which such bindings are made in a leading tennis-shoe factory. The method used is somewhat similar to the production of frictioned duck for the manufacture of tire casings, though of course this cloth is not frictioned but is used just as it comes from the mill, or is stiffened by a proper sizing.

The cloth is run, a number of thicknesses at a time, under a descending knife set to cut at an angle of 45 degrees, in other words, through a bias cutting machine. The diamond-shaped pieces are joined at their selvages, either by sewing or cementing, thus forming a continuous web which is wound tightly on a metal mandrel. This roll is then placed in a machine like that shown in the illustration, and from this wide roll, narrow ones are cut by a rapidly revolving circular knife which is adjustable to cut rolls of any desired width.

THE USES OF BIAS BINDING.

Such bindings, sometimes plain, or stiffened with starch or glue, are used for seam stays in various manufactures, and as



FOLDING BIAS BINDING.

back stays in shoe manufacture. By far the larger use is for binding the edges of cloth which would otherwise ravel out. It is used around the tongues of oxfords and boots, and also along the lace stays and around the tops of canvas footwear, unless the material itself is folded in and stitched to form a finish.

FOLDING, SEWING AND MEASURING.

For this purpose the binding must itself be folded that its own raw edges be concealed and protected. Various devices are used

for such folding, some of which do the work and rewind into compact rolls, while others are attachments to the sewing machines, which take in the flat binding, fold in each edge, and feed it to lap over the material to be bound, so that one stitching passes through both edges of the binding and the material between. During this operation the binding is also measured off into exact lengths to fit the part to be bound.

BIAS BINDING MATERIALS.

These bindings are made mostly of cotton cloth, usually white, brown or black for tennis shoes, though poplin and even satin



CUTTING BIAS BINDING.

are used by slipper manufacturers. Such bindings are also used in finishing many other different articles, such for instance as dress shields, in which case they are made from material the same color as the articles to be bound. Some bindings are cut from fabrics imitating leather, for use by the manufacturers of pocket-books. In fact, the uses for this seemingly unimportant line of goods are so many and varied that large factories are devoted exclusively to the production of the many varieties.

GOVERNMENT SPECIFICATIONS FOR RUBBER SHEETING.

M. H. SPECIFICATIONS.

MATERIAL. Shall be a cotton fabric, thoroughly coated with a white rubber compound, single coated, and weigh not less than 13 ounces per square yard. The rubber compound shall be vulcanized by open steam.

FINISH. The rubber sheeting shall have a smooth, uniform soft finish, free from stickiness and defects.

WIDTH.—The rubber sheeting shall be not less than fifty-three (53) inches in width.

CONSTRUCTION. The rubber sheeting shall show on analysis not less than 70 per cent of rubber compound. The rubber compound shall consist of not less than 30 per cent by weight of new and un-recovered rubber and shall show on analysis not over 4 per cent of its weight of organic acetone extract, nor over 2 per cent of its weight of free sulphur.

TENSILE STRENGTH. The rubber sheeting shall have a minimum tensile strength in the warp of forty (40) pounds, and in the filling of thirty-five (35) pounds. The tensile strength shall be determined by using the strip method on strips 9 inches long by 1½ inches wide from both the warp and filling directions of the fabric. The strips to be ravell'd to exactly one inch in width.

TESTS. The condition of rubber sheeting shall remain unchanged when submitted to the following tests:

- (1) Subjected to urine for 18 hours.
- (2) Subjected to 5 per cent phenol solution for 18 hours.
- (3) Subjected to steam at 240 degrees F. for two periods of twenty minutes each.

The tests and analyses to be conducted in accordance with the procedure followed at the Bureau of Standards.

PACKING. The rubber sheeting shall be packed in rolls of approximately 50-yard lengths, and not more than 4 rolls to the box. Boxes to be of at least ¾-inch (finished size) lumber, tongued and grooved, white pine or spruce preferred, and must be new and of appropriate make and size. Ends to be reinforced by two cleats running perpendicular to grain of wood, and strapped. (Medical and Hospital Supplies Division, Washington, D. C., April 9, 1919.)

What the Rubber Chemists Are Doing.

VULCANIZATION WITHOUT SULPHUR.

THE RESULTS obtained by L. Ostromyslenski in vulcanizing rubber without sulphur, that were published in THE INDIA RUBBER WORLD, November 1, 1916, page 65, and November 1, 1917, page 84, have been reviewed by W. Bunschoten,¹ who has made an extended series of experimental investigations on the subject, the results of which are quoted below:

ACTION OF ACCELERATORS WITHOUT SULPHUR.

It seemed of importance to test whether accelerators used in the normal sulphur-curing process would show catalytic action in a mixture without sulphur and thus lead to a well-vulcanized product. In order to carry this out, mixtures were made of the following composition: 100 parts raw rubber, 4 parts dinitrobenzene, 1 part accelerators, or instead of the latter 1 part vulcanite, and these cured for $\frac{1}{2}$, 1, 1½, 2, 2½ and 3 hours at 147 degrees C. in the oil bath. The result was that the products were not vulcanized and in these experiments these accelerators were without effect.

Ostromyslenski found that different metallic oxides which accelerate the normal vulcanization process, in contradistinction to the above-named organic accelerators, do promote the curing without sulphur. Stevens² confirms that with mixtures of nitro compounds to which litharge has been added vulcanization does take place. All of the following tests were made with the addition of litharge, and it was found that vulcanization resulted.

In order to judge as to the behavior of various rubbers with reference to this new curing method, two different raw rubbers were used, namely, a slowly vulcanizing crepe and a fast vulcanizing sheet. The vulcanization coefficients (quantity of combined sulphur calculated on 100 parts of raw rubber) of these rubbers were, respectively, 2.6 and 4.5 in a mixture of 7½ per cent of sulphur and 92½ per cent of rubber after vulcanization for 1½ hours at 50 pounds gage pressure.

With these rubbers the following mixtures were made: 100 raw rubber, 8 litharge, and 4 nitrobenzene. These mixtures were vulcanized for increasing periods in the oil bath at 147 degrees C., corresponding to 50 pounds gage pressure. Tensile tests were then made on a Schopper machine with the following results:

TABLE I. CURING TESTS WITHOUT SULPHUR.

Time of Cure, Minutes.	Smoked Sheet Vulc. Coeff. 4.5.		First Latex Crêpe Vulc. Coeff. 2.6.	
	Breaking Load, Kgms. Per Cm ² .	Elongation at Break, Per Cent.	Breaking Load, Kgms. Per Cm ² .	Elongation at Break, Per Cent.
30	0.5	697	Undercured	...
45	14.5	983	Undercured	...
60	2.4	906	Undercured	...
90	35.8	815	10.4	610
120	27.8	874	22.0	704

These figures show that curing took place, but that the mechanical properties are much inferior to those obtained with the normal vulcanization methods. Judging also by the exterior and the course of the elongation curves leads to the conclusion that all the test pieces were much under-vulcanized. That curing did take place was evident from the fact that the product was insoluble in benzene although considerable swelling took place.

Similar curing tests were carried out with m-dinitrobenzene in the same proportions and at the same temperature of cure. The products obtained did not show any swelling in benzene, thus proving that complete curing had taken place. (Table II.)

TABLE II. CURING TESTS WITHOUT SULPHUR.

Time of Cure, Minutes.	Smoked Sheet, Vulc. Coeff. 4.5.		First Latex Crêpe, Vulc. Coeff. 2.6.	
	Breaking Load, Kgms. Per Cm ² .	Elongation at Break, Per Cent.	Breaking Load, Kgms. Per Cm ² .	Elongation at Break, Per Cent.
10	103	798	32	Underc'd
15	105	737	45	Underc'd
20	87	663	54	Underc'd
30	62.5	741	45	Underc'd
45	62.5	660	45	Underc'd
50	51	640	73.50	629
75	52.5	616	48	641
90	39.5	515	58.5	603
100	134	352	58	612

¹ "Communication of the Netherlands Government Institute for Advising the Rubber Trade and the Rubber Industry," at Delft, Holland.

² "Journal of the Society of Chemical Industry," February 15, 1917; also THE INDIA RUBBER WORLD, May 1, 1917, page 451.

These figures tend to show that after 10 to 15 minutes the sheet exhibits its best mechanical properties, which decline on prolonged curing. Initially the rubber, on increasing the time of cure, becomes somewhat stiffer. After some time this ceases and the curves of the stress-strain diagram begin to run parallel. If the vulcanization be continued the only consequence is that the end point is situated lower on the curve; in other words, the breaking load is diminished. While the sample with the highest vulcanization coefficient cured the faster in these experiments, this may not be accepted as a rule.

Other mixtures were prepared, consisting of 100 parts sheet rubber (vulcanization coefficient 4.5), 8 parts litharge and, respectively, 1, 2, 3, 4, 6 and 8 parts of m-dinitrobenzene; also of 100 parts sheet rubber (vulcanization coefficient 4.5), 4 parts m-dinitrobenzene, and, respectively, 2, 5, 8 and 11 parts of litharge. The vulcanization was carried out for increasing periods in the oil bath at 147 degrees C. The results are seen in Table III, from which it is evident that with increasing quantities of m-dinitrobenzene and litharge the velocity of vulcanization is increased.

TABLE III. INFLUENCE OF INCREASING QUANTITIES OF M-DINITROBENZENE AND LITHARGE ON THE MECHANICAL PROPERTIES AND THE VELOCITY OF VULCANIZATION.

Composition of Mixture.	M-Di-nitro-benzene, Per Cent.	10 Minutes' Cure.		20 Minutes' Cure.		60 Minutes' Cure.	
		Breaking Load, Kgms. Per Cm ² .	Elongation at Break, Per Cent.	Breaking Load, Kgms. Per Cm ² .	Elongation at Break, Per Cent.	Breaking Load, Kgms. Per Cm ² .	Elongation at Break, Per Cent.
Rubber 100 Litharge 8	1	59	974	108	770	76.5	923
	2	70.5	938	108	770	75	772
	3	100	1,005	106	818	79	715
	4	103	798	...	...	51	640
Litharge 8	6	84	773	114	698	58	590
	8	...	...	...	...	...	...
Litharge.							
Rubber 100 M-Di-nitro-benzene 4	2	...	973	37	846	81	741
	3	103	798	111	812	90	772
	8	95	932	78	700	51	640

The influence of the curing temperature is shown by the figures given in Table IV.

TABLE IV. INFLUENCE OF CURE ON THE MECHANICAL PROPERTIES. COMPOSITION OF THE MIXTURE: 100 RAW RUBBER (VULCANIZATION COEFFICIENT 4.5), 8 LITHARGE, AND 3 M-DINITROBENZENE.

Temperature of Cure, Degrees C.	5 Minutes' Cure.		10 Minutes' Cure.		20 Minutes' Cure.		60 Minutes' Cure.	
	Breaking Load, Kgms. Per Cm ² .	Elongation at Break, Per Cent.	Breaking Load, Kgms. Per Cm ² .	Elongation at Break, Per Cent.	Breaking Load, Kgms. Per Cm ² .	Elongation at Break, Per Cent.	Breaking Load, Kgms. Per Cm ² .	Elongation at Break, Per Cent.
137	7.4	650	68	908	99	845	85	727
142	33.6	693	117	974	94	793	60	682
147	33.4	931	95	899	127	847	79	763
152	40	926	88	823	...	...	...	...
157	86	940	94	808	84	760	40	710

The mechanical properties of the cured product do not seem to be influenced much by the temperatures of curing.

The author expresses the opinion that while this method of curing without sulphur could replace vulcanization with sulphur, it would not prove practicable, owing to the rapid deterioration of the product by aging. The alteration of properties that takes place is unexplained. Probably it is not due to oxidation because the acetone extract from a sample after six months' aging was found about equal to that of the raw rubber. From this it is also evident that very little dinitrobenzene remains after vulcanization. Also the product remained entirely insoluble in benzene.

OXIDIZING AGENTS.

The curing action of several inorganic oxidation agents was investigated because Ostromyslenski regards vulcanization as a kind of oxidation. The following list of substances were employed: arsenic acid, potassium persulphate, chloride of lime, potassium bichromate, potassium permanganate, potassium chloride, potassium nitrate, sodium nitrate, manganese peroxide, and potassium ferricyanide. The test mixtures consisted of 100 grams raw rubber and 4 grams of these oxidation agents. They were heated in the oil bath for one half hour to one hour at 147 degrees C.

Judging by the exteriors, with all the compounds a beginning of vulcanization took place, but in no case did a well-cured product result. Still, going by the exterior and the rate of dissolving in benzene, all mixtures were more cured than those of raw rubber mixed with nitro and dinitrobenzene, without the addition of litharge. It seems possible, therefore, that with these compounds also, with the aid of a suitable accelerator, good vulcanization could be obtained.

VISCOSITY TESTS.

A solution of one gram of rubber and 400 mgrs. dinitrobenzene in 100 cc. benzene was kept for some days in a brown bottle, after which the viscosity was measured, both in the light and in the dark. The resulting tests show that the viscosity of the rubber solution diminishes very rapidly under the influence of m.-dinitrobenzene in the light, even so rapidly that it was impossible to measure the viscosity in light, although an increase takes place, as is found from a measurement in the dark.

The same tests were repeated after the rubber solution had been heated for one-half hour at 65 degrees C., after adding dinitrobenzene. The concentration of the solution before and after heating was the same.

The results obtained show that the viscosity is increased under the influence of dinitrobenzene while heating is applied, and again declines rapidly in the light. From this one would be led to assume that dinitrobenzene assists both depolymerization of rubber solutions by light as well as the polymerization by heat. The vulcanization with dinitrobenzene could be regarded, therefore, as a polymerization by heating. Analogous with this the vulcanization with sulphur could be regarded as an acceleration of the polymerization, as assumed by Bernstein¹ and Kirchoff,² while in addition, a combining of sulphur would have to be assumed to take place as a secondary process, either chemically or physically.

VULCANIZATION OF RUBBER BY ULTRA-VIOLET RAYS.

The following excerpt on the vulcanization of rubber by ultra-violet rays is from a series of articles on ultra-violet rays and their industrial applications by Ellis and Wells in "The Chemical Engineer," July, 1918, page 298:

Practical vulcanization of rubber by ultra-violet rays may be carried out with Olivier's apparatus (United States Patent No. 1,256,496, February 12, 1918). Olivier notes that rubber vulcanized by means of ultra-violet light is particularly useful for cementing purposes, since the treatment produces thick elastic liquids which are real liquid rubbers. With power cementing processes, the surfaces of rubber to be cemented were coated with a solution containing 6 to 12 per cent of rubber and usually several layers of such cement were necessary to effect cementing. With this method of producing the solution a much more dilute solution can be obtained than heretofore. In fact, the dilution may be 0.5 to 0.6 per cent.

When this latter solution is used for cementing, the two rubber surfaces absorb the solution, and it is claimed that when placing the surfaces in contact a real autogenous union of the two rubber surfaces can be obtained. When surfaces of rubber are so united, they are not separated by a comparatively thick layer of cement, as with former cements, but they are in immediate contact on account of the penetration due to the dilution of the solution.

In carrying out the process, the first factor to be fixed is the duration of the exposure to the ultra-violet rays. Experience has shown that after a certain time of exposure, the decomposition of the rubber increases rapidly, whereas the vulcanization effect increases to only a small extent. The duration of exposure of course changes according to conditions, depending on the size of lamp used, the thickness of the solution, and the distance of the solution from the lamp. When using a 220-volt, three-ampere quartz lamp, and a solution a fraction of a millimeter in thickness placed at a distance of five centimeters from the lamp, the duration limit would be 40 seconds.

When solutions of rubber are being vulcanized with ultra-violet rays, the sulphur usually used can be replaced by sulphides and, in a general way, by any sulphides which can be decomposed by ultra-violet rays, such as carbon disulphide, allyl sulphide, or antimony sulphide. After vulcanization, when these sulphides are used, there is no uncombined sulphur left in the solution as, according to Olivier, it is precisely the sulphur which is decomposed out of the sulphides which allies itself with the rubber. Vulcanization can also be effected by adding to the solution at the same time ordinary free sulphur and carbon disulphide.

Under these conditions, vulcanization occurs concurrently between the rubber and the sulphur decomposed out of the sulphide.

DIFFUSION OF GASES THROUGH INDIA RUBBER

A study of the diffusion of gases through india rubber by Sir James Dewar appears as an appendix to a lecture on "Problems of Hydrogen and the Rare Gases" in the "Proceedings of the Royal Institute," volume 21, page 543. A few of the interesting results are as follows:

The relative rates of diffusion of the following gases, through Pará rubber membranes 0.1-mm. thick, at one atmosphere pressure, and 15 degrees C. are: air, 10; nitrogen, 0.69; carbon monoxide, 0.94; helium, 1.75; argon, 1.28; oxygen, 2.0; hydrogen, 5.6; carbon dioxide, 14.0. The absolute rate for air is 200 cc. per square centimeter per day. The relative rate varies with the temperature. It is difficult to associate the order of diffusibility with any chemical or physical property. For example, the rate of diffusion of helium, the most volatile of gases, is one-eighth that of carbon dioxide.

The rate of diffusion through india rubber of gases dissolved in various liquids was investigated. The relative rate of gases in solution is not so low as their proportional lowering of the volume concentration in the liquid. Water, for example, at 15 degrees C., dissolves 1/60 of its volume of air or hydrogen, but the rate of diffusion from air or hydrogen-saturated water is only reduced to one-quarter of that of the rate in air. The behavior in alcohol is the opposite. Air goes through the membrane with equal rapidity whether alcohol is around it or not.

"THE MUTUAL CONDENSATION OF UNSATURATED COMPOUNDS IN Connection with Terpenes, Resins and Rubber." H. J. Prins. Hilversum. "Chemisch Weekblad," Volume 16, 64-74 (1919). A review, with particular reference to polymerization of unsaturated compounds and the vulcanization of rubber. It is maintained that this type of reactions cannot be explained under one grouping without the aid of the valence theory and the theory of mutual activation. ("Chemical Abstracts," May 20, 1919, page 1071.)

CHEMICAL PATENTS. THE UNITED STATES.

PROCESS OF PRODUCING RUBBER COMPOSITIONS AND VULCANIZATION PRODUCT, consisting of adding to rubber a wet precipitate of barium sulphate formed in the presence of a colloidal gel (animal glue), mixing the resultant precipitate with the rubber, drying the mix, and heating it with a vulcanizing agent to effect vulcanization.

The homogenous vulcanized product formed by adding to rubber and animal glue formed into a gel by water, mixing the gel with the rubber, driving off the water, and heating the resultant dry mix with a vulcanizing agent to effect vulcanization. (Robert C. Hartong, assignor to The Goodyear Tire & Rubber Co., both of Akron, Ohio. United States patent No. 1,301,693.)

IMPREGNATION OF FABRICS FOR BALLOONS. The fabric is first impregnated with soft paraffine or petroleum, etc., and coated on one side with a compound of rubber, ceresin wax, litharge, and sulphur, applied in a dissolved state and subsequently vulcan-

¹"The Rubber Industry," 164, London, 1914

²"Kolloid-Zeitschrift," 12, 35, 1914.

³Van Iterson, "Communications of the Netherlands Government Institute for Advancing the Rubber Trade and the Rubber Industry," Part VIII, page 239; The India Rubber World, April 1, 1919, page 362.

ized. (Joseph Harold Mandleberg, Pendleton, Manchester, England. United States patent No. 1,302,064.)

COMPOSITION FOR IMPREGNATING AND COATING BALLOON AND LIKE FABRICS: 100 parts by weight of rubber, 1 to 5 parts of wax, $\frac{3}{4}$ to 2 parts of litharge and 2 to 4 parts of sulphur. (Joseph Harold Mandleberg, Pendleton, Manchester, England. United States patent No. 1,302,066.)

TREATING RUBBER TO INCREASE ITS ELASTICITY, which consists of subjecting it to the action of a resinous gummy preserving jelly in its natural state. (Ruben Zertuche, Torreón, Mexico. United States Patent No. 1,302,266.)

PUNCTURE-CLOSING SOLUTION. A compound consisting of equal parts by volume of distilled water and alcohol, there being admixed to each gallon of the combined liquid three ounces by weight of a filler such as paper pulp, and silk fiber, the liquid serving to carry the fiber and pulp to a hole in a tire whereby a mat is formed to bridge the hole. (Ralph Noll and Christopher C. Shephard, Chadron, Nebraska. United States patent No. 1,302,416.)

VULCANIZABLE COMPOSITION. Powdered scrap leather is boiled in water containing sufficient caustic to saponify the fatty matter in the leather without dissolving the leather, then the treated leather powder is dried, and mixed with a resilient vulcanizable binding material under the action of heated mixing rolls. (John Stuart Campbell, London, England. United States patent No. 1,302,463.)

PLASTIC COMPOSITION. A solution of glue containing sulphonated fish oil and formaldehyde. (Lothar E. Weber, Brighton, Massachusetts. United States patent No. 1,302,739.)

PLASTIC MATERIAL AND PROCESS. A solution of glue and water, adding thereto sulphonated fish oil, adding and mixing therein a quantity of fibers, supplying to the product a comparatively weak solution of formaldehyde, and subjecting the product to pressure and heat. (Lothar E. Weber, Brighton, Massachusetts. United States patent No. 1,302,740.)

RUBBER COMPOSITION AND METHOD OF MAKING. A mixture of rubber and chemically treated cotton in powdered form, and free, or substantially so, from the tensile strength possessed by untreated cotton. (John M. Bierer, assignor to Boston Woven Hose & Rubber Co., both of Boston, Massachusetts. United States patent No. 1,303,759.)

RESILIENT RUBBER COMPOUND MATERIAL.—A sheet of resilient material having a non-slipping hairy surface consisting of a vulcanized rubber binder and incorporated wool fibers; the proportion of rubber to wool being such that the resulting material possesses the tensile strength and wear-resisting property of vulcanized rubber loaded with zinc oxide, and the elasticity of pure rubber. (Talmon H. Rieder and William B. Wiegand, Montreal, Quebec, Canada, assignors to The Goodyear's Metallic Rubber Shoe Co., Naugatuck, Connecticut. United States patent No. 1,305,008.)

THE UNITED KINGDOM.

VULCANIZING INDIA RUBBER. Potassium or sodium dissolved in a primary or secondary aromatic amine is used as an accelerator of vulcanization. The particular accelerators described are sodium or potassium in aniline or potassium in diphenylamine. (Dunlop Rubber Co., 14 Regent Street, Westminster, and D. E. Twiss, Royal Road, Sutton Coldfield, Warwickshire, England. British patent No. 124,276.)

BALLOON FABRICS, ETC. Fabrics for balloons are impregnated on the uncoated side with petroleum jelly solution. (J. Mandleberg & Co., Albion Waterproofing Works, Pendleton, Manchester, England. British patent No. 124,494.)

IMPREGNATING AND COATING FABRICS. Balloon and like fabrics or materials are rendered impermeable to gases by impregnation and coating with a solution of a composition consisting of 100 parts of rubber, 1 to 5 parts of ceresine or paraffine wax, $\frac{3}{4}$ to

2 parts of litharge, and 2 to 4 parts of sulphur. A number of coatings of different strengths are applied to the fabric, the earlier one being very thin, so as to cause thorough impregnation. After vulcanization by slowly raising the temperature to 285 to 295 degrees F, the fabric may be treated with petroleum jelly in solution. (J. Mandleberg & Co., Albion Waterproofing Works, Pendleton, Manchester, England. British patent No. 124,495.)

BALLOON OR AIR-SHIP FABRICS. Gelatine is used for or in addition to layers of hitherto used materials, such as rubber, oil, cellulose compositions, etc. (R. T. Glazebrook, National Physical Laboratory, Teddington, Middlesex; W. M. Rouse, 74 New Oxford Street, London; and A. Johnston, Castle Mills, Fountainbridge, Edinburgh. British patent No. 124,520.)

THE DOMINION OF CANADA.

SOLE COMPOSITION. A vulcanized shoe sole or heel composed of a mixture of comminuted waste felt roofing saturated and treated with asphaltum and boiled linseed oil, reclaimed rubber, and vulcanizing material. (Charles S. Bird, assignee of George R. Wyman and Andrew E. Currier, all of Walpole, Massachusetts. Canadian patent No. 190,652.)

RUBBER SUBSTITUTES. The process and product of a vulcanized composition of matter consisting of linseed oil which has been oxydized at a temperature of 200 to 250 degrees C., aluminum stearate, a numeral hydro-carbon of high boiling point, an inert filler, and sulphur. (Edward S. A. Cohen, Hague, The Netherlands. Canadian patent No. 190,802.)

THE FRENCH REPUBLIC.

PROCESS OF REGENERATING VULCANIZED SOFT OR HARD RUBBER. (B. J. F. Varenhorst and J. G. Fol. French patent No. 489,230.)

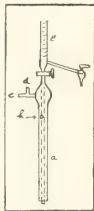
GERMANY.

PROCESS FOR IMPROVING CAOUTCHOUC-LIKE SUBSTANCES. The caoutchouc-like substances obtained by treating butadiene or its homolog with metals such as sodium, in presence of carbon dioxide (see French patent No. 459,005), do not yield satisfactory products on vulcanization. Good results are obtained, however, if the substances before vulcanization are subjected to mild oxidation, corresponding to an absorption of 3–4 per cent or even 6 per cent of oxygen. For example, the product obtained from isoprene by the action of sodium in presence of carbon dioxide, after being washed with water, is spread out while still moist and exposed to the air. After three days, when about 3 per cent of oxygen has been absorbed, the sticky mass is worked on the rolls, mixed with sulphur, etc., and vulcanized. (Badische Anilin und Soda Fabrik. German patent No. 307,341.)

LABORATORY APPARATUS. IMPROVED AUTOMATIC BURETTE.

THE improved automatic burette shown in the illustration was devised by Mr. George J. Hough, Bureau of Soils, United States Department of Agriculture. Its merits are that it requires no bracket and can be quickly cleaned and used for different solutions.

The base of the burette consists of a glass tube, *a*, one-half-inch in diameter, for elevating the solution, surrounded by a much wider tube; and when inserted in a rubber stopper to fit the solution reservoir, this gives the apparatus sufficient stability so that it requires no bracket to hold it upright. The tube *c* is for the attachment of a rubber pressure bulb, and tube *d* is closed with the finger when pumping air into the reservoir. The hole *h* in the outer tube equalizes the pressure in the reservoir and must be above the level of the liquid in the reservoir.



New Machines and Appliances.

COMBINED IMPREGNATING VACUUM DRYER AND SOLVENT RECOVERY APPARATUS FOR FABRICS.

THE ACCOMPANYING ILLUSTRATION shows a unit of an apparatus in which fabrics and tire duck may be impregnated with rubber solution, dried in a vacuum and the solvent subsequently recovered for reuse.

In front of the first section is placed a chamber which is fitted with a sealed connection, separating it from the dryer. The first



THE DIVINE IMPREGNATING AND SOLVENT RECOVERY APPARATUS.

section is built of sufficient size to contain the entire roll of fabric and is equipped with an impregnating tank filled with the rubber solution. As the roll unwinds, the fabric passes through the tank and is impregnated with the solution. The fabric is then automatically taken into the large chamber of the dryer and thence runs through the entire length of the dryer in four passes.

The heat vaporizes the solvent in the impregnated duck, this vapor going over to the condenser, where it is condensed, and the solvent passes through the solvent recovery apparatus where it is recovered. The finished, dried, impregnated duck is wound up on another roll and after the operation is completed, the door of the unit is opened and the finished roll removed. (J. P. Divine Co., Buffalo, New York.)

CRUDE RUBBER SLICING-MACHINE.

When cases or bales of crude rubber arrive at the factory and the coverings are removed, it is quite a difficult matter to separate the rubber sheets, while the baled rubber is often a solid mass. For reducing the rubber to pieces convenient for the



THE PEERLESS RUBBER CUTTER.

washing machines, a novel machine has recently been invented that combines the power hack-saw principle with mechanical features necessary in a machine, for slicing crude rubber of all sorts.

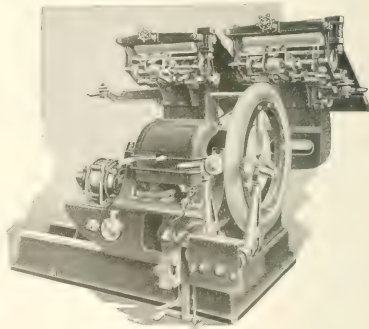
It is of the horizontal type with direct-connected motor, or belt drive, and special gearing for actuating the sickle blade

that reciprocates in a guide. A spiked vise, 28 inches between the jaws and 24 inches high holds the block of rubber while a film of water is distributed to all parts of the blade to facilitate the cutting operation. If a hard foreign substance should be encountered in the rubber, a relief is automatically applied which offsets the machine and prevents breakage.

This machine operates at a speed of 150 strokes per minute and feeds downward at the rate of $\frac{1}{4}$ -inch per stroke. Although it weighs 1500 pounds, and occupies 8 by 3 feet of floor space, it may be moved wherever desired with comparative ease. It is claimed that 125 to 150 bales of rubber can be cut in ten hours on this machine by one man. (Peerless Machine Co., Racine, Wisconsin.)

PNEUMATIC-TIRE-BUILDING MACHINE OF NOVEL CONSTRUCTION.

FILLER THREADS of tire-building fabric are stronger than the warp threads. Therefore, a better tire is made by reversing the warp and filler threads in building up the carcass of a pneumatic tire. In cord-tire construction the same reason



THE KNIGHT TIRE-BUILDING MACHINE.

exists for reversing the threads of cord fabric. For this purpose the present machine is provided with two independent fabric-feeding tables and mechanisms, and is operated in the following manner.

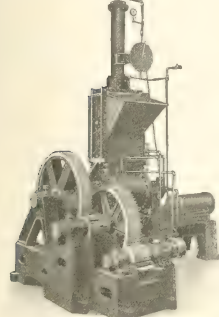
The first fabric strip is threaded through the feed-mechanism, the pressure adjusted by a hand-wheel, and the fabric end drawn down by hand until the cone-roller rests on the core to which the fabric is attached. When the machine is started the cone-roller revolves the feed-mechanism at a speed 14 per cent slower than the core speed, thereby providing uniform tension.

As the core revolves, another ply is attached to the first ply on the table, and when the end of the first ply reaches the core the machine is stopped and the second ply separated from the first and thrown back over the pressure-bar. When the two ends of the first ply are joined together on the core, the latter is revolved at an increased speed and the first ply stitched down. The core is then removed to the second feeding mechanism and the process repeated in applying the second ply. In making a small tire that does not require more than four plies of fabric, the bead-setting arm is swung against the tire and the bead set

in proper place by one revolution of the core. This is again shifted to the first position, the opposite bead set in place and the end of the fabric taken from the pressure bar and drawn down until the cone-roll rests on the core and the core revolved to apply the third ply. After this is stitched down, the core is again shifted to receive the fourth ply, which completes the process for a small tire. (The Knight Manufacturing Co., Canton, Ohio.)

AN IMPROVED AUTOMATIC MIXER.

Enclosed mixers of the type here shown are now considered as standard rubber-mill equipment and have demonstrated their superiority on the softer stocks, all black tread stocks and many mixtures that are injurious to workmen.



THE BAMBERG MIXER

The important improvements embodied in this new machine include a large cooling area to reduce the temperature of the material being mixed; it is practically dust proof; the discharge door easily slides so that small effort is required to discharge the material that leaves the machine in comparatively small pieces; the shafts, bearings, and general construction are of a rugged design to withstand the severest strain; and the motor drive is substantial in construction and quiet in operation.

COLLAPSIBLE TIRE-BUILDING FORM.

This machine handles batches from 75 to 150 pounds, depending on the gravity. A larger size is capable of successfully mixing batches of 450 pounds, gravity 1.5. (Birmingham Iron Foundry, Derby, Connecticut.)



CLOSED. THE D. M. B. TIRE-BUILDING FORM. OPEN.

upon itself that the unvulcanized tire can be removed with little effort from the form without stretching the beads or otherwise damaging it.

It is claimed that the use of this form will greatly lessen the cost and labor of tire building. In fact, its introduction has made possible the employment of women as tire builders on account of the simplicity and ease of its operation.

Referring to the illustrations the view on the left shows the form in closed position ready for building the tire, the view on the right shows it in open or collapsed position for removal of the tire. This building form is very easily and quickly changed from closed to collapsed position by drawing inwardly the upper sliding section by means of a rack and pinion actuated by a hand socket wrench.

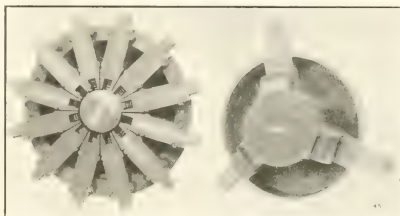
The section is then folded over toward the center on a hinge and each hinged side section is in turn folded, as shown in the view on the right. When the form is in this position the tire can be easily lifted from it without strain or distortion. (De Mattia Bros., Inc., Garfield, New Jersey.)

PNEUMATIC CHUCKS FOR TIRE-BUILDING MACHINES.

Air-operated chucks have recently come into use for holding the bases of solid tires and the cores of pneumatic tires during building operations.

The 12-jaw chuck shown on the left in the illustration is a special chuck designed for use in connection with a solid rubber tire-trimming machine. It will take tires from 28 to 36 inches in diameter, each of the jaws having a movement of over 4 inches. Owing to the narrow width of the small tires, it is necessary to make the chuck only $3\frac{1}{2}$ inches wide on the outside diameter. The chuck has 12 jaws, which are necessary to avoid springing the tire ring out of shape, which is the main difficulty with a four-jawed chuck. All working parts are fully enclosed, making them dust-proof and eliminating danger to the workman.

The movement of the jaws is obtained through a rack-and-pinion movement that is operated by a 12-inch standard double-acting air cylinder. This chuck can also be made for external gripping by using false jaws.



AIR-OPERATED CHUCKS.

TWELVE-JAW CHUCK

THREE-JAW CHUCK.

The three-jaw chuck shown in the illustration on the right is used on pneumatic tire-making machines and the interior construction is similar to that of the twelve-jaw chuck. It has a range from 17 to 24 inches, to accommodate regular-sized cores. These chucks are operated by a standard 10-inch double-acting air cylinder. The three-jaw chuck can also be used on tire-building stands, there being four chucks to each stand. (American Pneumatic Chuck Co.; Neidow & Payson Co., 9 South Clinton Street, Chicago, Illinois, general sales agents.)

P. I. W. TIRE-BUILDING STANDS.

Both of these stands are built alike, with the exception that the ratchet holding the arm in position is operated by a foot-lever on one machine while the other is hand-controlled.

The spider revolves on a turned shaft, riveted into the arm, and is provided with three adjusting screws capable of accommodating cores for any size of tire from 28 to 44 inches in diameter. The ratchet catch on the spider is reversible, enab-

ling the operator to work on either side, or it may be thrown out, permitting the spider and core to turn freely.

The lever system on the foot-operated stand is made of bar steel, counterbalanced with a weight, thus doing away with springs and the inconvenience they cause. The lever can be changed from the right to the left by reversing the connecting rod and attaching the foot lever to the line on the opposite side.



TIRE BUILDING STANDS.
FOOT-OPERATED. HAND-OPERATED.

of the stand thus permitting the operator to work on either the right or left side of the stand. (Pechstein Iron Works, Keokuk, Iowa.)

PORCELAIN FORMS FOR DIPPED GOODS.

The forms used in the manufacture of dipped goods are now largely made of porcelain and require specialized knowledge in order to produce an article that will be satisfactory in every respect.



PORCELAIN FORMS.

(The Colonial Sign & Insulator Co., Akron, Ohio.)

The difficulty with an ordinary porcelain form is its liability to craze after being in use for some time. This objection, however, has been finally overcome and vitreous forms are now made that will withstand the steam or acid cure without crazing. They are supplied in the proper size and are easy to maintain in a cleanly condition.

Forms for rubber gloves, finger-cots, nipples, toy balloons, and in fact almost any special shape used in the dipped rubber goods business can be made of porcelain.

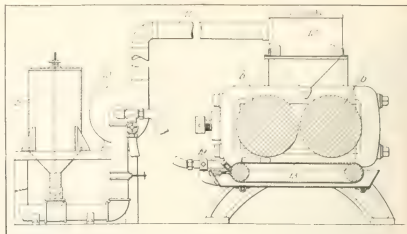
MACHINERY PATENTS.

APPARATUS FOR FEEDING COMMINUTED MATERIALS TO MIXING-MILLS.

THIS machine feeds powdered ingredients to a mixer and collects and returns to the mill surplus material until all of the charge has been worked into the rubber.

The materials are contained in the hopper 5 that discharges by gravity into a pipe line 6, to which other material hoppers may be connected. The fan 10 forces the materials that are deposited in pipe 6, through pipe 11 to a hopper 12, from which the discharge falls on one of the rolls 6.

The surplus powder that falls between the rolls is collected in the center of an endless belt 13 and is drawn through nozzle 19 by suction of the fan, back to the upper part of pipe 6 and again delivered to the hopper 12. (William Jameson, assignor



DRY POWDER FEEDER FOR MIXERS.

to The Fisk Rubber Co., both of Chicopee Falls, Massachusetts. United States patent No. 1,302,053.)

OTHER MACHINERY PATENTS.

THE UNITED STATES.

- N^{O.} 1,301,148. Pressure bag for use in treating vulcanization. M. A. Marquette, Springfield, assignor to The Fisk Rubber Co., Chicopee Falls—both in Massachusetts.
1,301,233. Electric repair vulcanizer. O. C. Dennis, Wilmette, Ill.
1,301,131. Apparatus for retread vulcanizing. E. Harris, Los Angeles, Calif.
1,301,721. Repair vulcanizer. I. E. McElroy and I. K. H. Minneapolis, said McElroy assignor of his right to C. H. Rogers, St. Paul—all in Minnesota.
1,302,122. Tire-making machine. L. P. Arnold, Norwalk, Conn.
1,303,484. Machine for extruding rubber, etc. J. Stratton, Bowden, and E. A. Claremont, High Legh—both in England.
1,302,660. Machine for making pneumatic tire flaps. E. G. Hulbe, Akron, Ohio, assignor to Kelly-Springfield Tire Co., Jersey City, N. J.
1,303,256. Tire core. H. A. Clark and C. F. Lowe, assignors to The Clyde F. Lowe Co.—all of Cleveland, Ohio.
1,303,485. Machine for grooving and finishing tires. R. H. Keaton, San Francisco, Calif.
1,303,492. Stock-rack for tire-building machine. C. Kuentzel, Youngstown, assignor by mesne assignments to The Goodyear Tire & Rubber Co., Akron—both in Ohio.
1,304,995. Machine for making rubberized-fabric tubes and strips. J. T. Lister, Cleveland, O.

THE DOMINION OF CANADA.

- 190,462. Apparatus for vulcanizing rubber. The American Rubber Co., assignor of A. L. Comstock—both of Boston, Mass.
190,466. Apparatus for manufacturing rubber boots. The Canadian Consolidated Rubber Co., Limited, Montreal, Que., assignor of C. J. Randall, Nantawick, Conn.

THE UNITED KINGDOM.

- 124,277. Apparatus for molding butt-ended tubes. Dunlop Rubber Co., C. Macbeth, and R. H. Cunningham, 14 Regent street, Westminster.
124,365. Machine for converting strip rubber into tubular form for inner tubes, including means for cleaning off chalk, etc. E. C. R. Marks, 57 Lincoln's Inn Fields, London. (The Goodyear Tire & Rubber Co., 1144 East Market street, Akron, O., U. S. A.)
124,585. Apparatus for applying hard rubber layer to foundation band of solid tires. Dunlop Rubber Co., C. Macbeth, and E. Sullivan, 14 Regent street, Westminster.

THE FRENCH REPUBLIC.

- 489,188. Apparatus and process for waterproofing threads, fabrics, and fibrous materials. A. O. Tate.
489,277. Improvements in the manufacture of cellular tires. J. C. Anderson.
489,431. Improvements in the apparatus and process for manufacturing pneumatic tire casings. J. M. Gilbert.

PROCESS PATENTS.

THE UNITED STATES.

- N^{O.} 1,301,953. Manufacturing fabric for casings of airships, balloons, etc., by coating with vulcanized rubber, French chalk, and lining with goldbeaters' skin, etc. James McKechnie, Barrow-in-Furness, assignor to Vickers, Limited, Westminster—both in England.
1,302,175. Forming elastic fabric with curved edge. S. T. Metz, Brooklyn, N. Y., assignor to Victory Corset & Girdle Co., Inc., a New York corporation.
1,302,405. Construction of pneumatic tire casing. W. L. Mitten, Davenport, Ia.
1,304,694. Manufacture of strand fabric. M. A. Marquette, Springfield, assignor to The Fisk Rubber Co., Chicopee Falls—both in Massachusetts.
1,304,909. Vulcanizing tubes. F. T. Roberts, assignor of one-half to R. H. Rosenfeld—both of Cleveland, O.

THE UNITED KINGDOM.

- 6,698. Strengthening airplane fabrics with lining of waterproofed fabric. Portadown Weaving Co. and T. J. Greaves, Anagh Factory, Portadown, County Armagh. (Not yet accepted. Abstracts to abridgments of specifications, 1915.)

New Goods and Specialties.

A RUBBER-OPERATED RIFLE.

Boys playing at soldiering always enjoy a rifle. The one shown here looks enough like the regulation Army one to satisfy, besides shooting actual bullets—made of harmless soluble material which will not injure even if swallowed. There



FIG. 1. WINDMASTER RIFLE.

is a flexible rubber tube extending backward from the breech-end of the barrel, terminating in a sanitary glass mouthpiece, and the "bullets" are slipped into an opening at the breech end. This toy may be had either with or without a target of five cut-out horsemen mounted on hinged supports. (The Evanston Supply Co., 118 North La Salle street; C. J. Van Houten & Zoon, distributors, 140 South Dearborn street—both in Chicago, Illinois.)

HARD-RUBBER RADIO RECEIVER.

A new type of radio receiver, named "Murdock" for its manufacturer, is made from hard rubber composition and bakelite. It is said to be unusually sensitive and therefore dependable. It is held in place by an adjustable head-piece of metal which is divided into two parts that may be spread away from each other or used close together to suit the contour of the operator's head. (William J. Murdock Co., Chelsea, Massachusetts.)



"MURDOCK" RADIO RECEIVER.

"SEALTITE" PATCHES.

A tire-repair patch that will permit the user to apply it and immediately use the mended tire has been devised. It is self-vulcanizing and requires only a little cement for its application after the surface around the puncture or blow-out has been buffed. It is reinforced with fabric, making a strong, tight-holding mend. (The Federal Rubber Co., of Illinois, Cudahy, Wisconsin.)

A WAR-DEVELOPED EXCLUDER.

The demands of war have given an impetus to many novelties in footwear, or at least to the production of distinctive varieties from previous standards. One of these is the two-buckle style of arctic shown here. The upper is of fine black cashmerette, while the sole and foxing are of gray or white

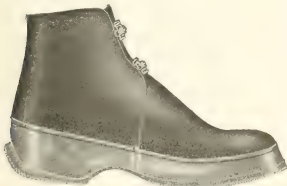


FIG. 2. ARMY EXCLUDER.

rubber, the heel being reinforced at the back. This has a wide folded tongue reaching to the top, which keeps out snow, slush and water as effectively as a rubber boot. This is named the "Army" excluder by the company

which made many thousand cases of footwear for Canadian field troops during the war. (Canadian Consolidated Rubber Co., Limited, Montreal, Quebec, Canada.)

A HIGH-GRADE BATHING CAP.

A bathing cap which attracts because of its good quality as well as because of its practicability is illustrated below. It is one of the many bathing-cap developments of the present season that has not been set aside for something better. It is made of



"AVIATION" BATHING CAP.

pure rubber, gray in color, with a surface mottling for decoration. It has ear-tabs to keep out the water and keep the hair dry, and a chin-strap to hold it in place. This strap is held by a white enameled snap-fastener.

The picture here shows a man wearing the cap, but it is made in larger sizes for women. Those who dive will appreciate its practicability. (The Miller Rubber Co., Akron, Ohio.)

RUBBER BATHING ACCESSORIES.

One set of new bathing accessories (Stern Brothers, 60 West 42nd street, New York City) included a cape, parasol and beach cushion of red rubber, worn with a red rubber cap. The parasol was square-pyramid shape and the beach cushion was square. All were decorated with flights of birds painted on with black waterproof paint, touched with colors. The edges of the cape and its collar, and of the parasol, and cushion were finished with a wide double fold of rubber, slashed to make loop fringe.

Another set (Saks & Co., Sixth avenue and 34th street, New York City) was composed of a cape, cap, parasol, bathing-suit bag, and beach cushion. These were made of rubberized navy-blue fabric with a white polka-dot design. The cape had a close-fitting shoulder-yoke with scarf extensions, of red rubber, cemented to the body.

The Tam-O-Shanter cap had squares of blue checked off with red at its edge, and a red rubber tassel. The parasol, bag, and cushion were edged with narrow slashed fringe. The bag was of the new type, full, gathered to a wide top. This set was worn with a suit of navy-blue satin.

A NOVEL BALL.

A rubber ball that should delight the little folks has recently been patented, which comprises some unusual features.

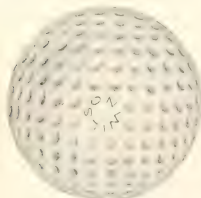
Over an ordinary rubber ball on which are painted two grotesque faces, are two semi-spherical caps vulcanized to the top and bottom of the ball but free elsewhere. When these are turned back, as shown in the illustration, the faces are revealed. At the juncture point of one of these caps a long rubber thread is attached, by means of which the toy can be used as a return ball. When a toss ball is desired, the thread is wound up inside the cap. With the caps open, the thread is wound around the juncture point, forming a sort of collar. (C. Otis Griffin, New Bern, North Carolina.)



THE GRIFIN RUBBER BALL.

GOLF BALL WITH RUBBER-WOUND CORE.

Another new golf ball claims to be "different" in the manner of winding the rubber thread around the core. This, it is said, gives the ball liveliness. Control on approach is also claimed for this ball because of its pitted cover. It is conducive to surer putting, and the ball is not swerved by wind pressure. The fixed center of gravity makes the ball hug the green closer and roll steadily and surely, although it lifts easily and with certainty because the club grips it so well. (Thos. E. Wilson & Co., 701 North Sangamon street, Chicago, Illinois, and 25 West 45th street, New York City.)



"STRESS" GOLF BALL.

RUBBER-LINED AND RUBBERIZED BAGS.

The two bags shown in the accompanying illustrations are intended to be used to carry diapers, but could be used as well for bathing-suit bags. The one on the left is of black saten and has a silk draw-cord at the top and a silk tassel at the bottom. It is fitted with a removable waterproof bag inside,

WATERPROOF
DIAPER BAGS.

held in place by snap fasteners at the top. This bag is fourteen inches long, but weighs only a few ounces. The bag on the right is made of double-faced rubberized cloth and has two sections besides a pocket on the outside. It is checked in black and white. (Montgomery Ward & Co., Chicago avenue and Larabee street, Chicago, Illinois.)

A NEW USE FOR SPONGE RUBBER.

The writer recently found in a Western drug store a shaving "brush" of sponge rubber—a simple contrivance, yet effective and eminently useful. A cylindrical piece of sponge rubber about two inches in diameter and a little more than that in length, was compressed at one end and tightly embedded in an enameled wood handle. The other end of the sponge flared out in conical shape with rounded base. This formed a shaving-brush, both for applying soap or cream, and for rubbing it in to soften the beard.

This is a simple article, easy to manufacture, inexpensive enough to sell well at a small price. No maker's name appears on it, nor is there any mark to show it was ever patented. It would seem to be a good article for the novelty manufacturer.



SPONGE RUBBER SHAVING-BRUSH.

TESTBESTOS BRAKE LINING.

A new kind of brake lining is called "TESTBESTOS." It is manufactured from extra long asbestos fibers woven and interwoven in strong brass mesh and impregnated with sufficient rub-

ber to bind it properly. This brake lining is made in widths from one to four inches by quarter-inches and in five thicknesses from one-eighth-inch to five-sixteenths. (American Asbestos Co., Norristown, Pennsylvania.)

"UNIVERSAL" LIFE-
SAVING SUIT.**A SUIT FOR LIFE-SAVING.**

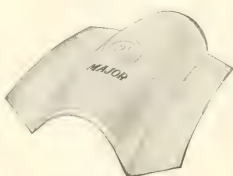
Among the many articles whose production was particularly stimulated by the recent war is the life-saving suit of many kinds, some odd but interesting, and many intensely practical. One of the newer ones is illustrated here. It is made of rubberized material which is nevertheless sufficiently soft and pliable to allow freedom of movement. No air cells are used, but the garment gets its buoyancy from a lining of kapoc such as is used in government life-preservers of the ordinary type.

It is claimed that in this suit the wearer can swim, recline, or float on the water, and even sleep. It can be folded up compactly and takes less than a minute to put on over the usual clothing. It is made in sizes for men, women and children. (G. H. Masten Co.)

A TRADE-MARKED BLOW-OUT PATCH.

The manufacturer of a blow-out patch so successful that it was widely imitated, devised the scheme of marking his product with a trade-name. This is why the "Major" appears under

its own name. Just as the title of his rank distinguishes the army officer, so the blow-out patch which is dignified with a name is easily identifiable and procurable. It is said in behalf of this patch that it will not bulge through the blow-out in the casing and become road-cut. (The General Tire & Rubber Co., Akron, O.)



THE "MAJOR" PATCH.

A NEW FABRIC TIRE.

A new fabric tire, made with long-fiber Sea Island cotton in its carcass, has an extra thick tread and a white, thick sidewall which gives it a neat appearance as well as materially increasing its strength. The wall cushion extends through to the beads, which are anchored by a chafing strip so wide that it reaches up into the side-walls.

The extra width of the chafing strip is said to give increased flexibility to the sides, add a tensile strength of two hundred pounds to the inch, and stiffen the grooves, at the same time eliminating rim-cuts.

Breaker strips of additional width are also used in this tire, thereby minimizing the danger from separation of plies and eliminating stone-bruises. (The Gates Rubber Co., Denver, Colorado.)

GATES "DOUBLE-
MILEAGE" TIRE.**THE "ERCO" WAR-SOLE.**

A new rubber and fiber sole brought out during the war is called the "Erco." It is said to give very satisfactory wear. (Essex Rubber Co., Trenton, New Jersey.)

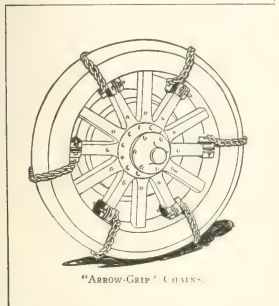
Tire Accessories.

A SIMPLE NON-SKID CHAIN.

A SIMPLE NON-SKID CHAIN which is easily and quickly adjusted is shown in the illustration below. It fits the tire, because it is made in different sizes in order to accomplish this, and it has no special connectors or links, so that it is easily replaced. Any standard cross chain can be used in an emergency until the "Arrow Grip" can be obtained.

The special feature of this accessory is the clamp by which it is attached. This clamp is attached to the spoke of the wheel and is lined with rubber so that it cannot injure the spoke. Once

it out, because a strip of leather is cushioned between the tire tread and the protector. The openings between the sections permit sand, mud, gravel, and water, to escape. The device is light in weight. (The Bukolt Manufacturing Co., Stevens Point, Wisconsin.)



"ARROW-GRIP" CHAINS.

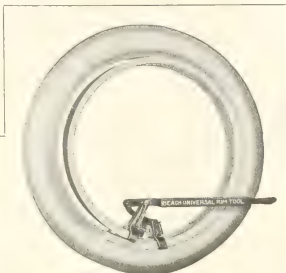
sary. The hook to which the chains are fastened is integral with the clamp and the latch when once pressed down cannot open accidentally. The clamp is rust-proof and no special tools are required to attach or detach it. The chain is twisted so that it lies flat on the tire, and the pull is on the felloe, not on the spokes or clamp. No jacking up of the truck is required. (Arrow Grip Manufacturing Co., Inc., Glens Falls, New York.)

A PROTECTOR AGAINST PUNCTURES.



"HUGOBOS" TIRE PROTECTOR.

grade steel studs. These tire protectors, in addition to guarding against punctures, keep the car from skidding in sand and on muddy roads. They fit easily over the tire and do not wear



GREB RIM TOOL.

it, it can remain permanently, making the attachment of the chain the only operation necessary.



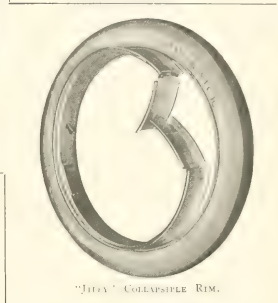
WEED CHAIN JACK.

A tire protector that prevents the tire from becoming punctured is composed of a series of sections so fastened together that any individual one may be removed if damaged. These sections are made of a light, water-proofed, specially treated vulcanized fabric reinforced with strips of belting with the tread and high-

ing the rim. The lever swings by center and the spring of the rim holds it in position. The operation is reversed for replacing tires. (The Greb Co., 195 State street, Boston, Massachusetts.)

A RIM-TOOL FOR SPLIT RIMS.

A rim-tool that fits all sizes and types of transversely split rims is practical and useful. The one shown here is made to spread a rim one-quarter of an inch when required, as well as to raise one end two inches and carry it four inches over and by the other, thereby contract-



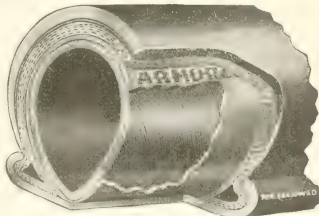
"JIFFY" COLLAPSIBLE RIM.

THE "JIFFY" RIM.

A rim that can be collapsed simply by dropping on the floor or road is this one which has a toggle joint, rust-proof, with no springs or hinges to get out of order. No tools are necessary. The collapsible section is about fourteen inches in length when collapsed. (Parker Collapsible Rim Corp., Chicago, Illinois.)

SIMPLY OPERATED CHAIN-JACK.

A chain-jack operated by pulling chain in either direction. (American Chain Co., Bridgeport, Connecticut.)



"ARMORCORD" INNER TUBE.

"ARMORCORD" TUBE.

An inner tube that strengthens the tire is of cords embedded in rubber, so arranged that while the outer surface expands, the inner one contracts lengthwise, preventing creeping. (Armorcord Rubber Co., Salem, Ohio.)

COURSES IN MODERN PRODUCTION METHODS BY JOHN Calder and associates. Business Training Corp., New York City. (Six

NEW TRADE PUBLICATIONS

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The map will be published in other languages for distribution in the foreign markets of the world to enable the foreign buyer to familiarize himself with New England manufactured products.

YOUNG'S PATENT RUBBER CO., INC., Has. May 9 (New York), \$250,000.
Manufactures tires. Founded by F. and C. Young, both of Jamestown—both in New
York. Principal office, Buffalo, New York. To manufacture tires, etc.

Aldens' Successors, Inc., June 13 (New York), \$100,000. T. A. Maguire, president and treasurer; A. H. Brown, vice-president and assistant treasurer; M. A. Howser, secretary; W. C. Martin, assistant secretary; E. T. Rice, J. French, and J. Cone, directors. Principal office, 290 Broadway, New York City. To import crude rubber and general merchandise.

American Balloon Co., Inc., June 9 (New York), \$2,000. S. J. Sing
E. K. Walker, both of Forest Hills, Long Island, New York; G. C. Hall,
Akron, Ohio. To manufacture rubber balloons.

American Thermostat Corp., May 2 (New York), \$500,000. E. T. Bickford, Whitman, Massachusetts; C. V. Stehle, 120 Broadway; J. Romano, 612 West 178th street—both of New York City. To manufacture

Beacon Tire & Rubber Co., June 7 (Delaware), \$1,000,000. R. W. Crissey, B. F. Moore, both of Kent, Ohio; J. R. Riley, Pittsburgh, Pennsylvania, Delaware agent, Capital Trust Co. of Delaware, Dover, Delaware. To manufacture inner tubes, tires, etc.

Biltwel Tire Corp., May 6 (Massachusetts), \$50,000. J. D. Rudnick 74 Elm Hill avenue; H. A. Rudnick, 68 Brunswick street—both of Roxbury; D. R. Silverman, 16 Charlotte street, Dorchester—both in Massachusetts. Principal office, Boston, Massachusetts. To manufacture, buy, sell, rebuild and repair rubber tires and tubes.

Carlton Tire & Rubber Co., Inc., June 16 (New York), \$25,000. F. G. Carlton, Woolston, Massachusetts; I. Rapoport, 1660 Union street; A. A. Matthews, 149 Stirling street—both of Brooklyn, New York. Principals of the firm, Brooklyn, New York.

Charles Tire & Rubber Co., Inc., June 18 (New York), \$4,669. I.
Locals, 8. Bernheim, W. Thirteenth St. of 1877 Broadway, New York
City. To manufacture tires, etc.

City. To manufacture tires, etc.
 Chelsea Tire & Repair Co., June 3 (New Jersey), \$10,000. N. E. and
 J. J. Daily, both of 7 North Boston avenue, Atlantic City, New Jersey.
 E. F. White, 1401 West Third street, Chester, Pennsylvania. Principal
 office, 3007 Atlantic avenue, Atlantic City, New Jersey. Agent in charge
 N. E. Daily. To repair tires.

1915 66th street, Brooklyn, New York; T. Crawford, 260 William street.
J. Klem, 153 East 116th. street both of New York City To manufacture
lath coats. 40

City Tire Co., Inc., May 29 (New York), \$5,000. S. and A. Newman
244 West 54th street; H. C. Specter, 1704 North Charles street—all of
New York City. To manufacture tires.

Colonial Rubber Manufacturing Co., May 31 (New Jersey), \$100,000. J. Baiger, 228 First street, Town of Union; J. Gardner, 37 Bond Place, Weehawken—both in New Jersey; W. C. Michael, 439 Putnam avenue, Brooklyn, New York. Principal office, 75 Montgomery street, Room No. 150, Jersey City, New Jersey. Agent in charge, G. D. Hendrickson. To manufacture, purchase, and sell tires, tubes, rubber boots, and all goods of which rubber is a component part.

Conestoga Tire & Rubber Co., May 27 (Delaware), \$25,000. A. R. and W. W. Trump, R. Pryde—all of Lancaster, Pennsylvania. Delaware agent, Capital Trust Co. of Delaware, Dover, Delaware. To buy and sell automobile tires and tubes.

Cord Tire Corp., May 5 (West Virginia), \$500,000. J. D. Comstock, H. B. Wovelbury, H. J. Powers, J. T. Johnson—all of Chester, West Virginia; A. J. Comstock, 2668 Edgesshill Road, Cleveland, Ohio. Principal office, Chester, West Virginia. T. manufacture and deal in rubber products.

Dayton Rubber Manufacturing Co. of New York, Inc., June 10 (New York), \$100,000. R. L. De Lisser, Great Neck; E. O. Machlin, New Rochelle—both in New York; W. P. H. Reilly, 248 West 102nd street, New York City. To manufacture tires, etc.

Doublewear Rubber Co., May 29 (New Jersey), \$125,000. C. P. Goldsmith, 41 West 36th street, New York City; L. and I. Cohen—both of 13 Parkers Place, Trenton, New Jersey. Principal office, 143-149 East State street, Trenton, New Jersey. Agent in charge, P. Forman. To buy, manufacture, sell, export, import and generally deal in rubber goods.

Dri-Kure Retreder Co., The, April 22 (Ohio), \$10,000. M. L. Cope president; E. M. Harbin, vice-president; H. B. Houghton, secretary and treasurer; H. J. Cope, assistant secretary and treasurer; H. B. Houghton Jr., director. Principal office, 405 East Market street, Akron, Ohio, branches at 80 Bagley avenue, Detroit, Michigan, and 5868 Baum Boulevard, Pittsburgh, Pennsylvania. To sell tire-repair machinery.

Economy Rubber Co., April 17 (Pennsylvania), \$90,000. G. P. Felty, Pittsburgh; E. E. Murphy, R. R. Yost, both of Johnstown—all of Pennsylvania. Principal office, Johnstown, Pennsylvania. To manufacture, sell and deal in rubber products, accessories and supplies.

Enterprise Tourist Case Co., Inc., January 9 (New York), \$50,000. J. I. Schulman, 619 West 143rd street; J. R. Korbet, 1562 Minford Place Bronx; W. Abramson, 648 West 160th street—all of New York City. To manufacture traveling equipment and rubber products, etc.

Five-Fifteen Tire Vulcanizing Co., January 14 (Tennessee), \$10,000
I. G. Burkle, C. W. Fellows, H. B. Arnoult, E. A. Rome, D. F. Clark
F. J. Lawless, Principal office, Memphis, Tennessee.
Hobbs and Belding Co., May 23 (Maine), \$2,600,000. E. M. Leavitt

A. J. Fogg, E. L. McLean—Principal office with Williamson, Burleigh & McLean, Augusta, Maine. To deal in tires, etc.
G. H. G. Auto Tire & Supply Co., Inc., June 16 (New York). \$5,000
H. I. and M. Grundt, A. Henig—all of 1483 Fifth Avenue, New York City. To carry on auto tire business.

Gibraltar Tire & Rubber Corp., May 14 (Delaware), \$400,000. A. Watson, Nyack; R. Krause, Sound View avenue, Clares Point, Md. A. Heyser, 446 Lexington avenue, Brooklyn—all of New York. Delaware agent, United States Corp. Co., 311 State street, Dover, Delaware. To manufacture and generally deal in tires.

Gillette Tire Co., Inc., June 2 (Delaware), \$50,000. F. R. Hensell, Philadelphia, Pennsylvania; E. M. MacFarland, J. V. Fimm, both of Philadelphia, Pennsylvania. Delaware agent, Corporation Guarantee & Trust Co., 227 Market street, Wilmington, Delaware. To import, export and manufacture automobiles, tires, tubes, etc.

Hercules Rubber Corp., May 27 (Delaware), \$1,000,000. E. H. L. Haefliger, 104th street, both of Miami and Coral Gables, Fla. A. Robinson, 444 and Vine streets—all of Cincinnati, Ohio. Delaware agent, Corporation Co. of Delaware, 901 Market street, Wilmington, Delaware. To deal in rubber products.

Hood Tire Shop, March 13 (Indiana), \$25,000. B. L. Heer, J. J. Camroy, R. J. Diekmeyer—all of Terra Haute, Indiana. Principal office, Terra Haute, Indiana. To buy and sell automobile accessories.

Indiana Tire Co., Inc., February 27 (Indiana), \$50,000. D. K. Hall, R. M. Huggins, J. W. Hickman, 101 DuPont street, Indianapolis, Indiana. Principal office, Indianapolis, Indiana. To buy and sell automobile tires.

Jackson-May Rubber Co., April 23 (Arkansas), \$50,000. R. May, president; V. L. Jackson, vice-president; J. D. Simpson, secretary and treasurer—all of Little Rock, Arkansas. Principal office, Little Rock, Arkansas. To manufacture rubber specialties.

Levy, Kelban & Co., Inc., June 19 (New York), \$2,000. B. Levy, 75 East 104th street; J. Kelban, 412 East 104th street, both of New York City; S. Levy, 391 Kosciuszko street, Brooklyn, New York. To deal in auto tires and accessories.

M. & M. Tire Service Co., Inc., May 29 (New York), \$5,000. E. C. Handwerker, W. M. Mroczko, W. J. McCall—all of Buffalo, New York. Principal office, Buffalo, New York. Tire service station.

Madison Tire & Rubber Corp., June 12 (New York), \$625,000. C. W. Stauch, H. H. Macquah, H. L. Kimberly—all of 36 East 42nd street, New York City. To manufacture tires.

Milner Rubber Co., W. F. The, April 9 (Kentucky), \$10,000. W. F. Milner, R. H. and B. M. Rivers—all of Louisville, Kentucky. Principal office, Louisville, Kentucky. To buy, sell and repair automobiles and parts.

New Jersey Savold Tire Co., May 22 (New Jersey), \$2,000,000. H. A. Black, A. F. McCabe, J. R. Turner. Principal office, 15 Exchange place, Jersey City, New Jersey. Agent in charge, Tire Corporation Trust Co. To manufacture, purchase, sell, import, export, rebuild and repair tires.

Phenix Tire Corp., June 5 (New York), \$5,000. R. H. Forbes, 153 East 24th street, New York City; T. F. O'Brien, 124 Martine street; T. J. Brent, 2181 Bedford avenue—all of Brooklyn, New York. Principal office, Brooklyn, New York. To manufacture tires.

Pierces Tire Co., Inc., June 7 (New York), \$5,000. H. L. Lewen, 60 West 129th street; C. Pechner, 10 Broadway—all of New York City. To manufacture tires.

Pressman Tire & Rubber Co., May 27 (Delaware), \$3,000,000. T. L. Croteau, P. B. Drew, C. L. Rimlinger—all of Wilmington, Delaware. Delaware agent, Corporation Trust Co. of America, Du Pont Building, Wilmington, Delaware. To buy, sell and generally deal in rubber tires, tubes, etc.

Rainbow Tire & Rubber Co., February 5 (Ohio), \$250,000. C. E. Ross, president; H. L. Gilbert, vice-president; J. Taylor, secretary and treasurer; C. A. Morrison, treasurer; H. E. Fesley and C. A. Waggoner, directors. Principal office, 310 People's Loan Building, Delaware, Ohio. To do general rubber business.

Redden Resilient Wheel Co., June 4 (Massachusetts), \$50,000. E. E. Redden, 101 Oakland street; F. J. O'Brien, Jr., 58 Belmont street; J. L. Connell, 17 Jekes street—all of Springfield, Massachusetts. Principal office, Springfield, Massachusetts. To manufacture and deal in automobile parts, accessories, etc.

Rialto Tire & Rubber Co., Inc., May 28 (New York), \$3,000. J. Jacobs, S. Bernheim, W. Loewenthal—all of 1877 Broadway, New York City. To manufacture tires, etc.

Rubber Products Corp., June 13 (Delaware), \$500,000. A. W. Britton, S. B. Howard, R. K. Thistle—all of 65 Cedar street, New York City. Delaware agent, United States Corporation Co., 311 South State street, Dover, Delaware. To manufacture and deal in goods made entirely or partly of rubber.

Scherer Rubber Co., Inc., The, June 11 (New York), \$20,000. D. C. and M. C. Scherer, both of 1123 Broadway; L. A. Malkiel, 116 Nassau street—all of New York City. To manufacture tires, etc.

Smith Tire & Rubber Co., Inc., May 15 (New Jersey), \$100,000. F. W. Smith, L. A. Ely, both of Rutherford, New Jersey; J. R. Arbozo, New York City. Principal office, Ely Building, 5 Erie avenue, Rutherford, New Jersey. Agent in charge, W. H. J. Ely. To manufacture, buy, sell and deal in all kinds of rubber goods.

Standard Tire & Rubber Co., The, May 6 (Massachusetts), \$150,000. W. P. Cronin, Belmont; J. S. Waddell, Winchester, both in Massachusetts; J. B. Hubner, New York City. Principal office, Boston, Massachusetts. To manufacture and deal in automobile tires, rubber goods, etc.

Stanley Tire & Rubber Corp., May 24 (New York), \$50,000. H. A. Chaney, 38 East 49th street, New York City; S. Fischel, 101 E. 11th street; Broner R. Heller, 1431 60th street, Brooklyn—all in New York. To manufacture tires, etc.

Universal Rubber Products Co., May 26 (Delaware), \$2,000,000. T. L. Croteau, P. B. Drew, C. L. Rimlinger—all of Wilmington, Delaware. Delaware agent, Corporation Trust Co. of America, Du Pont Building, Wilmington, Delaware. To manufacture tubes, tires and rubber goods.

Valley Tire & Rubber Co., June 7 (Delaware), \$50,000. W. F. O'Keefe, G. G. Stiegler, J. H. Dowdell—all of Wilmington, Delaware. Delaware agent, Corporation Co. of Delaware, 901 Market street, Wilmington, Delaware. To manufacture and deal in automobile tires, tubes, etc.

Wayne Tire & Rubber Co., May 19 (Delaware), \$600,000. H. R. Platt, E. C. Love, C. A. Wyer—all of Orville, Ohio. Delaware agent, Capital Trust Co. of Delaware, Dover, Delaware. To manufacture automobile tires, tubes, etc.

Weston Wheel Corp., June 10 (New York), \$5,000. F. G. Fischer, 900 Riverside Drive, C. F. Bailey, 226 Loring Place, both of New York City; W. Sawyer, 60 Berkeley Place, Brooklyn, New York. To manufacture auto wheels.

Yale Tire & Rubber Co., April 29 (Connecticut), \$500,000. J. E. Hubinger, C. W. Murdock, G. P. Smith—all of New Haven, Connecticut. Principal office, New Haven, Connecticut. To manufacture tires.

SPAWNING TIRE COMPANIES.

With headquarters in New York City, a group, perhaps two or three groups, have within the last six months incorporated some forty tire companies, probably more. This does not necessarily mean forty new factories, nor does it mean—in fact, just what is the idea? The list, the capitalization and the names of the incorporators is, however, illuminating to a degree.

One group consists of J. Jacobs, S. Bernheim and W. Loewenthal, all of 1877 Broadway. They are incorporators of the following companies during the last few months:

Arch City Tire & Rubber Co., Inc., capital \$5,000.
Arrow Tire & Rubber Co., Inc., \$15,000.
Charlestown Tire & Rubber Co., Inc., \$5,000.
Charlotte Tire & Rubber Co., Inc., \$4,000.
Cotton States Tire & Rubber Co., Inc., \$10,000.
Ellison Tire & Rubber Co., Inc., \$10,000.
Great Western Tire & Rubber Co., Inc., \$30,000.
Huguenot Tire & Rubber Co., Inc., \$3,000.
Oval Tire & Rubber Co., Inc., \$4,000.
Rialto Tire Rubber Co., Inc., \$23,000.
Spartan Tire & Rubber Co., Inc., \$5,000.
Tennessee Tire & Rubber Co., Inc., \$5,000.
Union Hill Tire Sales Station, Inc., \$4,000.
Valley Tire & Rubber Co., Inc., \$2,000.
West Gate Tire & Rubber Co., Inc., \$5,000.

The other group includes H. S. Hartstein, C. A. Weldon, A. Hirsch, S. Bernheim and M. Kittay, all of 35 Nassau street, New York City. Some three of these five are incorporators of the following companies:

Bridgeport Tire & Rubber Co., Inc., \$2,000.
Boston Tire & Rubber Co., Inc., \$4,000.
Baysome Tire & Rubber Co., Inc., \$2,000.
Central New York Tire & Rubber Co., Inc., \$20,000.
Connecticut Tire & Rubber Co., Inc., \$2,000.
Davenport Tire & Rubber Co., Inc., \$1,000.
Capitol Tire & Rubber Co., Inc., \$2,000.
Columbus Tire & Rubber Co., Inc., \$5,000.
Eric Tire & Rubber Co., Inc., \$5,000.
Essex Tire & Rubber Co., Inc., \$4,000.
Lluara Tire & Rubber Co., Inc., \$5,000.
Fair Tire & Rubber Co., Inc., \$5,000.
Fresno Tire & Rubber Co., Inc., \$5,000.
Gum Tire & Rubber Co., Inc., \$5,000.
Hawana Tire & Rubber Co., Inc., \$2,000.
Iron Tire & Rubber Co., Inc., \$1,500.
Missouri Tire & Rubber Co., Inc., \$5,000.
Newburgh Tire & Rubber Co., Inc., \$1,500.
Norfolk Tire & Rubber Co., Inc., \$1,000.
Newark Tire & Rubber Co., Inc., \$4,000.
Paterson Tire & Rubber Co., Inc., \$2,000.
Palace Tire & Rubber Co., Inc., \$3,000.
Reading Tire & Rubber Co., Inc., \$2,000.
Raleigh Tire & Rubber Co., Inc., \$2,000.
Schenectady Tire & Rubber Co., Inc., \$3,000.
Saxton Tire & Rubber Co., Inc., \$2,000.
Tire Export Co., Inc., \$2,000.
Watertown Tire & Rubber Co., Inc., \$5,000.
Wilmington Tire & Rubber Co., Inc., \$1,000.
Williamsburgh Tire & Rubber Co., Inc., \$3,000.
Yonkers Tire & Rubber Co., Inc., \$3,000.

Looking farther back, we find quite a number of other companies whose incorporators are S. Bernheim, C. A. Weldon and H. H. Jacobson, the address of the latter being 373 or 555 Grand street, Brooklyn, New York. Among these may be mentioned:

Blacklock-Poaner Tire Co., Inc., \$15,000.
Loston Tire & Rubber Co., Inc., \$4,000.
Colorado Tire & Rubber Co., Inc., \$1,000.
Chicago Tire & Rubber Co. of America, Inc., \$100,000.
Commercial Tire & Rubber Co., \$1,000.
Delta Tire & Rubber Co., \$1,000.
Eim City Rubber Co., Inc., \$1,500.
Equitable Tire & Rubber Co., Inc., \$1,000.
Fulton Tire Corp., \$200,000.
Government Tire & Rubber Co., \$2,400.
Leader Tire & Rubber Co., Inc., \$5,000.
Pacific Tire & Rubber Co., Inc., \$2,000.
Quality Tire Co., Inc., \$1,000.
Queen City Tire & Rubber Co., Inc., \$1,000.
Service Tire & Rubber Co., Inc., \$1,000.
Sea Gate Tire & Rubber Co., Inc., \$12,000.
Syracuse Tire Co., \$10,000.
Tire Company of Baltimore, Inc., \$100,000.
Tire Company of California, Inc., \$7,500.
Tire Company of Philadelphia, Inc., \$6,000.
Tire Outlet Co., Inc., \$1,000.
World Tire Corp., The, \$3,000.

Besides these there are some others in which one or more of the names of individuals mentioned above appear as incorporators.

From Rubber Planters in Mexico.

Letters to the Editor.

"I SOMETIMES WISH that the American rubber trade could have been with you in 1903, 1904 and 1905 when you visited Mexico, examined the plantations, and studied conditions. Could they, for example, have been crowded into the little launch that went up the Coatzacoalcas river, then up the Usapapa and finally entered the Chichigapa, landing at the long river pier at Plantation Rubio. Then after luncheon the whole party to take horse and ride for hours through the miles of rubber trees, visiting the villages of thatched houses, put up for the hundreds of laborers, viewing the substantial storehouses, together with the bungalows of the superintendent and foremen; they certainly would have been impressed, not only by the enterprise shown in the clearing and planting of thousands of acres of jungle but they could not but note how prosperous and contented were the workmen and their families. There would also have come to them the feeling of safety that we all had under the protection of Diaz and incidentally Uncle Sam!

"Had they taken that trip I could wish that they might take it again to-day. To be sure, the launch would afford a good target for bandit snipers along the river banks and would need to be armored. Over at Rubio the charred and rotting remains of the long pier might help one to flounder up to the site of the once tiled and brick *bodega*. Then up to the main road now choked with jungle growth, to the plantation where stood the administration settlement. Here would be seen destruction, wanton and complete—homes burned to the ground or dismembered and wrecked beyond description. Possibly they would wish to visit the graves of young Saenz and two other American white men killed by bandits because they tried to protect the property of their American employers. It would hardly be safe to visit the rubber plantings but could they do so they would find trees

Uncle Sam sleeps almost as soundly as scores of young Americans, whose graves dot the once prosperous plantations of the *tierra caliente*."

DESTRUCTION OF HEVEA TREES.

"As I have before indicated—I believe 50 per cent of the rubber plantations in Mexico, by adding cattle, corn and the like, would to-day be on a paying basis if they had been protected.



BRICK AND TILE FACTORY BURNED BY BANDITS.

But banditry prevailed, the workmen were driven away or forced into the army, and property destroyed in all directions. Americans left, those who could, and it seems hopeless to try to do anything. It is a shame, a shame that has continued for years.

"I do not suppose many know it but the experiments with the *Hevea* tree in Mexico proved that it would do just as well as in the Far East. Under fair conditions there should have been thousands of acres now in bearing. It would have meant the financial salvation of scores of American planters in Mexico. But the *Hevea* trees have been practically wiped out through forced neglect or wilful destruction.

"I might add that the American planter was a godsend to the Mexican laborer. *Hevea* plantations or any successful plantations meant food, clothing and schooling to a people sadly in need of all three. It also meant added revenue to a bankrupt government."

RUBBER FOOTWEAR SCHOOL.

Factory training under direct supervision and upon a production basis has proved eminently satisfactory for two years past in teaching the rudiments of rubber footwear construction in a leading American factory employing 8,500 persons, approximately 50 per cent of whom are women engaged upon the manufacture of rubber footwear. Learners remain in this school two weeks, or until they are able to produce 60 pairs a day. While in training they are paid \$10 per week, or if they are able to turn out a "full ticket" of 102 pairs, they receive \$16.50 per week. When transferred to the shoe-working department they are put upon a piece-rate basis.

Numerous pamphlets of value to those interested in various methods of industrial training have been published by the Department of Labor and may be had on application to the United States Training Service, 618 Seventeenth street, N. W., Washington, D. C.



BODEGA DESTROYED BY BANDITS.

slashed and burned and the choking jungle growth covering everything. Of all the old order nothing remains—all is changed, except the collection of taxes. This goes right on, and perhaps will result in final confiscation.

"This of course would be but one example. It could be duplicated many, many times had the visitors the heart for such inspection. Diaz is dead, God rest him, and Uncle Sam sleeps!

News of the American Rubber Industry.

GENERAL MANAGER AND SECRETARY OF THE RUBBER ASSOCIATION.

ALBERT L. VILES, who becomes general manager and secretary of The Rubber Association of America on July 1, is of English ancestry, and was born at Orland, Maine, December 20, 1881, and here he passed his boyhood days. He



ALBERT L. VILES.

attended the country school in that town, but his parents removing to Dover, New Hampshire, he continued his education at the Dover public schools.

His first employment was in the woolen mills, at Dover, and later in Auburn, New York. But his ambition was to be a railroad man, and in 1901 he entered the employ of the Lehigh Valley railroad as a laborer. Determined to succeed, he rose from one position to another, becoming telegrapher, station agent, accountant, assistant chief clerk in superintendent's office, ticket agent and freight agent.

In 1910 he accepted the position of investigator with the Official Classification Committee of the railroad lines east of the Mississippi river and subsequently became special agent and assistant to the chairman, specializing in commercial analysis of all lines of business throughout the Official Classification Territory in so far as related to freight classification. He prepared, presented and defended cases of the Interstate Commerce Commission and also engaged in special investigation work for various member railroad lines in the Official Classification Territory.

In August, 1918, he was called to become manager of the Tariff Division of The Rubber Association of America, Inc., which position he filled most efficiently until last April, when he resigned to become assistant manager of the Eastern Freight Inspection Bureau, United States Railroad Administration, in charge of freight inspection in Official Classification Territory. It is this position which he relinquished to become general manager and secretary of The Rubber Association.

He is a member of the Transportation Club and the Traffic Club, both of New York City, and also of the B. P. O. Elks.

DIVIDENDS.

E. I. du Pont de Nemours & Co., Wilmington, Delaware, manufacturer of chemicals for the rubber trade, has declared a quarterly dividend of $4\frac{1}{2}$ per cent, payable June 14, on stock of record May 31. A quarterly dividend of $1\frac{1}{2}$ per cent has also been declared on the company's debenture stock, payable July 25, on stock of record July 10, 1919.

The Firestone Tire & Rubber Co., Akron, Ohio, has declared its quarterly dividends of \$1.50 on its common stock, payable June 20, on stock of record June 10, and of $1\frac{1}{2}$ per cent on its preferred stock, payable July 15 on stock of record July 1, 1919.

The General Electric Co., Schenectady, New York, has declared a dividend of \$2 a share and a further stock dividend of 2 per cent, both payable July 15 on stock of record June 7, 1919.

Globe Rubber Tire Manufacturing Co., New York City, has declared a quarterly dividend of $1\frac{1}{2}$ per cent on its common stock, payable June 15 on stock of record May 31, 1919.

Kelly-Springfield Tire Co., New York City, has declared a quarterly dividend of \$1.50 on its 6 per cent preferred stock, payable July 1 on stock of record June 16, 1919.

The McGraw Tire & Rubber Co., Cleveland and East Palestine, Ohio, declared its regular quarterly dividend of three per cent on the outstanding common stock, payable June 1, 1919.

The Plymouth Rubber Co., Canton, Massachusetts, has declared its regular quarterly dividend of $1\frac{3}{4}$ per cent, payable June 2 on preferred stock of record May 26, 1919.

The Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pennsylvania, has declared a quarterly dividend of \$1, payable July 31 on common stock and July 15 on preferred.

THE NEW MAYWALD LABORATORIES.

For many years Dr. Austen, and later Dr. Maywald, operated laboratories at 89 Pine street, New York, chiefly for rubber investigation. Changes in lower New York and the need of more room has led Dr. Maywald to move to Newark, New Jersey, which is actually almost as near in point of time from uptown New York as is Pine street.

The new office and chemical laboratory is at 86 Park Place, two doors from the Public Service Terminal and two blocks from the Hudson Tube station, and the experimental laboratory is at Nutley, New Jersey.

Here a modern, well-equipped rubber-testing and experimental plant has been installed, including a washer, dryer, mixing mill, calender, vulcanizer and the varied array of instruments and devices for dissection, testing and analyzing rubber products of every sort. Ample accommodations are afforded for handling rubber research work and consultation practice, and visitors are cordially invited to inspect the new laboratories.

PRESIDENT-ELECT OF BRAZIL VISITS NEW YORK

President-elect Pessoa, of Brazil, arrived in New York City last month, en route to his own country, after serving as president of the Brazilian delegation to the Peace Conference. During his stay in the United States, the Pan American Society of the United States and government officials entertained Dr. Pessoa, thus affording the Government and people of the United States an opportunity of reciprocating the generous hospitality extended to ex-President Theodore Roosevelt and ex-Secretary of State Root, when they visited Brazil.

President-elect Pessoa has had a brilliant career in connection with the government affairs of Brazil, and is thoroughly representative of the new progressive generation that is coming forward in that country and Latin America. He believes in Pan Americanism which stands for real and lasting friendship between the United States and its sister American republics.

VAIL RESIGNS AS TELEPHONE PRESIDENT

Theodore N. Vail, a director of the United States Rubber Co. since 1912, has resigned as president of the American Telephone & Telegraph Co., an office which he has held since 1907. He retires from this important position to be released from many details, and to have more time for other interests. His connection with the company dates back to 1878, when he became general manager of the American Bell Telephone Co., which position he filled until 1887, after which he spent several years in travel, later going to Argentina to introduce electric railways in several South American cities. When Frederic B. Fish retired from the presidency of the great telephone company, Mr. Vail accepted the position and has filled it most acceptably ever since.

Although in his 74th year, he is keen and active, and his retirement from the presidency does not mean a severance from the company as he is still chairman of the board of directors.

TRADE NOTES.

The Dominion Asbestos & Rubber Corp., 154 Nassau street, New York City, has recently opened branches in Albany, New York, Atlanta, Georgia, and Allentown, Pennsylvania. The company increased its capital to \$100,000 the first of the year.

The Mechanical Tire Co., Inc., 49 North Third avenue, Mt. Vernon, New York, has been recently formed, with a capital of \$10,000, for the purpose of rebuilding pneumatic tires with a 3,000-mile guaranty. The plant is in operation and the business prospects are very good. Aaron Bers, who is well-known in the rubber scrap trade, is president and Charles S. Bornheim is treasurer.

The Mileage Tire Co., Inc., 2118 South Michigan avenue, Chicago, Illinois, is agent for the "Dri-Cure" retreader and uses the "Drico" rebuilding process in retreading tires. It has nine "Dri-Cure" molds in operation and besides the retreading of tires, sells the finished product, retreading equipment, tools, rubber stocks, etc.

The Alliance Tire Co., 259 West 57th street, New York City, is now handling the Goodrich line of "Safety Tread" tires and tubes.

The Pennsylvania Rubber Co., Jeannette, Pennsylvania, has opened an office in the Woolworth Building, New York City, for its export department. F. B. Beck will be in charge during the absence of D. D. F. Yard, who is going to the Far East on a business trip for the company.

The Republic Rubber Corp., Youngstown, Ohio, has recently opened a branch at Charlotte, North Carolina.

The Advance Rubber Co., Brooklyn, New York, is planning the erection of a one-story plant, 200 by 130 feet, in which it will install machinery for the manufacture of high-grade fabric and cord tires.

The Excello Tire & Rubber Co., 215 North 15th street, Philadelphia, Pennsylvania, has increased its capital stock from \$500,000 to \$1,000,000, including \$400,000 preferred stock and \$600,000 common, par value \$10. J. C. Brennan is president of the company, which was established in 1914 and manufactures "Xlo" tires and red inner tubes.

The Majestic Tire & Rubber Co., Indianapolis, Indiana, has increased its capital stock from \$100,000 to \$250,000.

The Indiana Rubber & Insulated Wire Co., Jonesboro, Indiana, is building a new three-story structure, with basement, 125 by 60 feet, to be used as a warehouse and shipping room. The company manufactures automobile, motorcycle and bicycle tires and soft rubber specialties as well as insulated wire and cables. The officers are: A. F. Seiberling, president; N. Huber, vice-president; S. H. Miller, treasurer, and R. W. Seiberling, secretary and general manager.

The Hydraulic Press Manufacturing Co., Mount Gilead, Ohio, has opened a branch office in the Union Bank Building, Pittsburgh, Pennsylvania, under the management of J. E. Holveck.

Wm. B. Scaife & Sons Co., Oakmont and Pittsburgh, Pennsylvania, has opened a sales and engineering office at 33 South Dearborn street, Chicago, Illinois, with Charles F. O'Hagan, formerly chief engineer of the company at Pittsburgh, as resident engineer and manager. This concern manufactures steel tanks for air, gas and liquids, steel shipping drums and range boilers, and the well-known Scaife water softeners and filtering equipment.

The Du Pont Chemical Co. has removed its executive and sales office to new quarters on Vandever avenue, east of Market street, Wilmington, Delaware.

The Washington Rubber Co., Washington, Pennsylvania, recently elected the following officers: J. L. Lockhart, president; S. L. McCurdy, vice-president; B. F. Mevay, Jr., secretary and treasurer; Burt S. Shafer, John W. Warrick, T. W. D. Hieber, and T. R. McKennan, directors.

The Gates Rubber Co., Denver, Colorado, is building five additional units to its factory. Two of these are four stories high with basement, of steel-reinforced concrete. One is reinforced concrete, two stories with basement. Two are brick with steel beam reinforcements. The concrete buildings are to be faced with pressed brick to harmonize with the architecture of the other buildings of the plant. All are expected to be finished and in use before the end of the summer.

The Pacific Trading Corp. of America, 90 West street, New York City, which was recently incorporated in New York and has affiliated companies in Europe and the Far East, will in future handle all rubber and other export and import business in New York, except where buyers prefer to deal directly with Far Eastern concerns. C. C. Halling is president and general manager, and F. H. Lyon, manager of the rubber department.

The American Chiclc Co., Long Island City, New York, is building a new factory to occupy the full block, 200 by 600 feet, at the Degnon Terminal. It will be six stories high, of reinforced concrete, and will cost \$2,000,000.

The Tamms Silica Co., Stock Exchange Building, Chicago, Illinois, is selling amorphous silica to manufacturers of rubber easers.

The Keystone Tire & Rubber Co., Inc., 1877 Broadway, New York City, has contracted to take the entire tire output of the Batavia Rubber Co., Batavia, New York.

TENSILE STRENGTH OF RUBBER-SULPHUR MIXTURES.

O. De Vries and H. J. Helldoorn, using a mixture of 92½ rubber and 7½ sulphur, cured in live steam at 148 degrees C, for increasing periods, have determined that the tensile strength for short cures increases rapidly with increasing cure till it reaches a maximum at two hours' cure with a coefficient of vulcanization of 4.99 per cent. The tensile strength then decreases and finally the region is reached where the rubber becomes brittle and gives low and irregular breaking points.

Maximum tensile strength is important in several ways. (1) It is a property of more definite and typical character than the tensile strength at an intermediate cure, and therefore better suited to express and compare the properties of rubber in this respect. (2) From a practical point of view a maximum of any property is of special value for testing purposes, as small deviations due to experimental error in the neighborhood of the maximum have little influence on the numerical result which is to be determined.

OTHER MIXTURES.

The relationships existing for mixtures of 92½ parts of rubber with 7½ parts of sulphur do not obtain with other compounds as shown by the results published by Gottlob¹, Eaton and Grantham², Spence³, P. Breul⁴, Stevens⁵ and De Vries and Helldoorn⁶.

Systematic investigation of the relation between tensile strength and state of cure for mixtures containing other compounds than sulphur only have not yet been published. There are enough data available, however, to allow the conclusion that quite distinct forms of curves will be obtained with these compounds. It is to be hoped that the systematic investigation of at least some of the more simple and most used of them will soon reveal the connections governing these cases, and so form a scientific basis for testing the rubber in such mixtures.

Money must work to succeed. Put yours to work in War Savings Stamps.

¹"Gummi-Zeitung," 30 (1916), 306 and 326.

²"Journal of the Society of Chemical Industry," 35, 1048.

³"Kolloid-Zeitschrift," 11, 278.

⁴"Le Caoutchouc et La Gutta Percha," 1911, page 5298.

⁵"Journal of the Society of Chemical Industry," 36, 872.

⁶Bulletin of the Central Rubber Station No. 1, pages 19 and 32.

THE RUBBER ASSOCIATION'S PRESIDENT.

IN ELECTING HOMER E. SAWYER as its president, The Rubber Association of America placed at its head one who knows every detail of the manufacture of rubber from its crude state to the finished product, and one who is also a notably successful executive.

He began in the factory of the Boston Rubber Shoe Co. in Malden, Massachusetts, at the age of 19, just after being graduated from the English High School in Boston in 1885. Working successively in each department, and mastering all the details of manufacture, he was first appointed assistant superintendent, and in 1893 was made general selling agent of the



HOMER E. SAWYER

company. This position he filled until 1901.

In the meantime the Boston Rubber Shoe Co. had been absorbed by the United States Rubber Co., and in June of the year mentioned Mr. Sawyer was elected manager of sales of the latter company. Later he was elected a director and vice-president in charge of footwear division.

He is also a director in several affiliated companies, among them being the American Commerce Co.; Canadian Consolidated Rubber Co., Limited; General Rubber Co.; General Rubber Co. of Brazil; Hastings Wool Boot Co.; United States Rubber Plantations, Inc.; Netherland Langket Rubber Co.; Rubber Regenerating Co.; Shoe Hardware Co.; United States Rubber Co., Limited, London; United States Rubber Export Co., Limited; and United States Tire Co.

Fond of out-door sports, Mr. Sawyer is a member of the Westchester Country Club, St. Andrews Golf Club, and the Racquet and Tennis Club, as well as of the Metropolitan, Union League, and Lotos Clubs of New York City, and of the Detroit Club, Detroit, Michigan.

At his home on Park avenue, New York City, is an excellent library where he spends a large part of such leisure time as his business duties allow. Believing that "the proper study of mankind is man," his favorite reading is biography, and his library is largely made up of the life-stories of prominent men, not only of America, but of other countries.

Deeply interested in the improvement of industrial conditions, Mr. Sawyer has been chosen to represent the rubber industry in the newly founded Inter-Racial Council, an association of business men formed to promote a better understanding between American employers and foreign-born employees.

He is a man of rare executive ability, keen business judgment, and quick perception, and to him is due, to a large extent, the marked success of the footwear business of the great company with which he is connected.

R. W. Palm will make his second trip to South America for the Pennsylvania Rubber Co., Jeannette, Pennsylvania, leaving this country July 1, 1919.

PERSONAL MENTION.

J. W. Coulston and J. W. Bossert, the president and treasurer of Reichard-Coulston, Inc., New York City, importer and dealer in rubber-makers' colors and chemicals, have returned from Europe after two months spent in going over the company's property there and investigating trade conditions.

J. C. Witwer has been appointed assistant superintendent in charge of production for the International India Rubber Corp., South Bend, Indiana. He was previously connected with the Kelly-Springfield Tire Co. and The Goodyear Tire & Rubber Co.

G. E. Habich has opened an office at 49 Liberty street, New York City, as a broker in crude rubber.

J. P. Cahoon has succeeded George A. Davidson as manager of the Albany, New York, branch of the Kelly-Springfield Tire Co., New York City.

A. W. Barry is the new manager of the Rochester, New York, depot of the Kelly-Springfield Tire Co., New York City. He succeeds F. T. Bailey.

D. D. F. Yard, sales director of the export division of the Pennsylvania Rubber Co., Jeannette, Pennsylvania, will visit Honolulu en route to Australia, Straits Settlements, New Zealand, China, Japan, India, and South Africa in the interest of the company, sailing from San Francisco about July 1, 1919.

Frank L. Williams has been designated New York representative of the Tyer Rubber Co., Andover, Massachusetts, under the authorization of the company to do business in the State of New York, at 302 Broadway, New York City. Mr. Williams has been with the Tyer company for thirty-four years and manager of the New York City office for fifteen years.

W. D. Palmer has been promoted to the position of manager of the New York City office of The Portage Rubber Co., Barberton and Akron, Ohio, with headquarters at 1924 Broadway. Mr. Palmer has been New York City salesman for the Portage company since 1917.

C. D. Studebaker has been appointed district manager for the Firestone Tire & Rubber Co., Akron, Ohio, controlling its four branches in New York City, Brooklyn, and Albany, New York, and Newark, New Jersey. His headquarters will be at 1871 Broadway, the company's New York City office.

H. L. Smith, until recently of the mechanical sales department of The Republic Rubber Corp., Youngstown, Ohio, at its branch in Detroit, Michigan, has been transferred to the Philadelphia district, with headquarters at 806 North Broad street, Philadelphia, Pennsylvania.

A. S. Hetzel, who has won considerable recognition as a tire sales executive in the past two years, as manager of the Cleveland branch, has been promoted by The Republic Rubber Corp.

Youngstown, Ohio, to district manager of the Philadelphia branch. In his new position Mr. Hetzel will have charge of one of the most important territories in the country and will make his headquarters in Philadelphia, Pennsylvania.

L. N. Bartlett has been appointed manager of the office of The Republic Rubber Co., Youngstown, Ohio, at 2018 Lorust street, St. Louis, Missouri.

O. S. Tweedy, who recently resigned as vice-president of the L. A. Young Industries, Inc., Detroit, Michigan, to which he went in the spring of 1918, after ten years with the Diamond Rubber Co., Akron, Ohio, has been elected vice-president of the Dryden Rubber Co., 1014 South Kildare avenue, Chicago, Illinois.



A. S. HETZEL.

The following well-known men in the trade arrived in New York City last month, from England: O. Shaw, managing director Francis Shaw & Co., Limited, Bradshaw, Manchester; Thomas H. Hewlett, managing director, Joseph Anderson &

Sons, Limited, Clayton, Manchester, and M. H. MacKusick, managing director, The Rubber Regenerating Co., Limited, Trafford Park, Manchester.

Sir Francis Watts, head of the Imperial Department of Agriculture for the West Indies, was in New York City recently en route for England.

E. A. Andersen, president and general manager of the Rubber Regenerating Co., of Naugatuck, Connecticut, while in New York City recently, entertained O. Shaw, Thomas H. Hewlett and M. H. MacKusick, friends from England.

ALDENS' SUCCESSORS, INC., SUCCEEDS AMERICAN BRANCH OF ALDENS' SUCCESSORS, LIMITED.

Aldens' Successors, Inc., 260 Broadway, New York City, importer and dealer in crude rubber and other general merchandise, was formed June 23, with the following officers: Thomas A. Maguire, president and treasurer; Alvah H. Brown, vice-president and assistant treasurer; M. A. Howser, secretary. Directors: Thomas A. Maguire, Alvah H. Brown, John Cone, Edwin T. Rice and John French. This firm succeeds to the American business of Aldens' Successors, Limited, of London, England.

WESTON JOINS AJAX RUBBER CO.

Announcement is made by the Ajax Rubber Co., Inc., New York City, of the appointment of Joseph C. Weston as vice-president and director of that company.

For a number of years Mr. Weston has been vice-president and director of sales of the United States Tire Co. His resignation from this position is effective July 1, 1919. Mr. Weston's career in the rubber trade has been one of steady and well-merited advancement covering a period of over 20 years.

SHUGART UNITED STATES TIRE SALES MANAGER.

Within less than a year from his promotion to the post of general branch sales manager of the United States Tire Co., New York City, George S. Shugart has been advanced to the position of general sales manager. In this position Mr. Shugart succeeds Joseph C. Weston, who resigned to make an important connection with the Ajax Rubber Co.

It is particularly interesting to note that Mr. Shugart's advancement is another example of the policy of the United States Tire Co. to fill vacancies in its high places from the ranks of its own workers.

A NEW FRENCH-AMERICAN BANKING HOUSE.

Hereafter, through the recently organized French-American Banking Corporation, American business men will be able to avail themselves of banking facilities in France as advantageous as Frenchmen themselves enjoy. This alliance to promote trade between France and the United States is capitalized at \$2,000,000, with a surplus of \$500,000, all paid in, and represents combined resources of over \$1,250,000,000. Half the stock of the corporation is held by the Comptoir National d'Escompte de Paris, while the other half is shared equally by the First National Bank of Boston and the National Bank of Commerce in New York.

The corporation will engage in the acceptance business and generally assist in financing trade between the United States and France, including French colonies in all parts of the world. The First National Bank of Boston has a branch in Buenos Aires, while the Comptoir National d'Escompte de Paris has, in addition to two hundred-odd offices throughout France, branches in Spain, England, Belgium, Australia, New Zealand and India, and is preparing to open further branches in Alsace and Lorraine. These facilities will enable French and American importers and exporters to secure the best of terms and services in developing or extending their trade.

The corporation has leased the ground floor at 65 William street, corner of Cedar street, New York City.

HORACE DE LISSER RETURNS.

AT A MEETING of the board of directors of the Ajax Rubber Co., Inc., Horace De Lissier was again elected president, thereby succeeding H. D. McClaren.

Mr. De Lissier was born in 1866, in Kingston, Jamaica, where his father was for more than 20 years collector of His Majesty's customs, subsequently moving to the United States and entering the cotton business.

Horace De Lissier was educated in the elementary schools in Jamaica and the public schools of New York City, and after graduation entered the cotton goods business. In 1894 he conducted a bicycle tire factory in England, which was later sold to a London syndicate. In disposing of this business he agreed to remain out of the rubber business for five years, and therefore took the United States agency for the Holbrook Sauce Co. of London.

At the expiration of the five-year agreement he identified himself with the International Tire & Rubber Co. of Milltown, New Jersey, resigning in 1905 to establish the Ajax Standard Rubber Co., of which the present Ajax Rubber Co., Inc., is the outgrowth. With the exception of two periods of short duration, he has been president of the company since its formation, and has retained continuously the post of chairman of its board of directors. At all times he has been the guiding spirit, and under his leadership the company has made continuous progress.

In 1910 he resigned the presidency to assume the vice-presidency and management of sales of the United States Motor Co., which position he resigned in 1912 to give again his whole attention to the Ajax-Grieb Co., sailing for Europe in July to study the situation of the tire business there. In August, that year, he married, at Covent Garden, London, England, Miss Ione Maggard.

During the Great War he was appointed to the "Business Men's Staff" of General Pershing, with the rank of major, to direct the erection of factories behind the firing lines in France. He was also chairman of the Liberty Loan Committee, representing the automobile and accessory trades, and was active in floating the several bond issues.

Besides being president and chairman of the board of directors of the Ajax Rubber Co., Inc., he is director and vice-president of the Briscoe Motor Co., Jackson, Michigan; vice-president and director of the Broadway Association of New York City; treasurer of the Annual Orphans' Automobile Day Association; member of the Executive Committee of the Tire Division and chairman of the Arbitration Committee of The Rubber Association of America.

He is an ardent yachtsman and a member of the Friars, Lambs, Lotos, New York Athletic, Great Neck Country, Bankers and Traffic clubs of New York, as well as of high Masonic bodies and Mecca Temple, A. A. O. N. Mystic Shrine.



HORACE DE LISSIER.

THE OBITUARY RECORD.

A PROMISING CRUDE RUBBER MAN.

THE SUDDEN DEATH by pneumonia, May 17, 1919, of C. J. Adams, as announced last month, was a shock to his many friends in the rubber industry.

Mr. Adams was engaged in the crude rubber business in New York City for a period of fourteen years. He began originally with the crude rubber firm of H. Hagemeyer & Brunn, and later joined the firm of A. W. Brunn & Co., crude rubber brokers. On the death of A. W. Brunn, he continued in the business with the firm of Fred Stern & Co., crude rubber importers, New York City. In the latter connection he became extensively known in the rubber trade and was universally well liked in both his social and business relations.



C. J. ADAMS.

A RUBBER FACTORY MECHANICAL ENGINEER.

Daniel J. Kirkham, mechanical engineer of The McGraw Tire & Rubber Co., East Palestine, Ohio, and Cleveland, died recently at Battle Creek, Michigan, where he went for medical treatment. His death came after a prolonged illness. Mr. Kirkham was born in Trenton, New Jersey, April 7, 1880, and was educated in the public schools there and at the Trenton Mechanical School. After an apprenticeship in practical shopwork at the Trenton Machine Works, he served successively the Quacker City Rubber Co., Philadelphia, Pennsylvania; the United and Globe Rubber Manufacturing Co., Trenton, New Jersey, and the Dunlop Tire & Rubber Co., Limited, Toronto, Ontario, Canada, where, after nine years' service, he resigned to join the McGraw organization last July.



DANIEL J. KIRKHAM.

Mr. Kirkham is survived by his widow and three children. A Masonic funeral was held at East Palestine, Ohio, and the interment was at Trenton, New Jersey.

A WELL-KNOWN NEW HAVEN RUBBER MAN.

The many friends of Hiram S. Raley were grieved to learn of his sudden death early in June. He was secretary-treasurer of the Raley Rubber Co., Riverton, Connecticut, manufacturer of dipped goods and nipples.

Mr. Raley was 46 years of age and was born at Eagle Harbor, Michigan. He was an expert chemical engineer, a capable and conservative manager, and for many years was associated with The Seamless Rubber Co., New Haven, Connecticut. He leaves his widow and four children.

ONE OF THE FOUNDERS OF THE RUBBER GROWERS' ASSOCIATION.

Sir William Hood Treacher, K. C. M. G., late Resident-General of the Federated Malay States, died May 3, 1919, at the age of seventy.

He was born in 1849, the son of the late Rev. J. S. Treacher, and was educated at St. Mary Hall, Oxford, England. He was

appointed Colonial Secretary at Labuan, and in 1881 was made the first Governor of British North Borneo. Later he became successively Secretary to Government, Perak; British Resident, Selangor and Perak, and Resident-General, Federated Malay States. He retired in 1904, later returning to England. He was one of the founders of the Rubber Growers' Association and a member of its council from 1907 until about a year ago, retiring because of declining health. He was a director in a number of planting companies in Sumatra, Borneo and the Federated Malay States, and as an author he wrote extensively of Borneo, on which his intimate knowledge made him an authority.

THE RAMSAY MEMORIAL FUND.

A movement deserving the favorable attention of the American rubber industry is the Ramsay Memorial Fund to commemorate the thirty-five years' service of the late Sir William Ramsay, devoted to the physical and chemical sciences, education, and public welfare. A central committee of distinguished men under the chairmanship of Lord Rayleigh and sub-committees in most of the great countries of the world are raising a fund of £100,000 for the establishment of Ramsay Research Fellowships, tenable wherever necessary facilities may be available, without national restrictions, and a Ramsay Memorial Laboratory of Engineering Chemistry at the University of London, where Sir William served twenty-six of his most fruitful years.

About half of the fund has been raised, but as only about £1,000 has been contributed by residents of the United States, the United States committee will welcome other gifts large and small. Checks may be mailed to the chairman of the United States Committee for the Ramsay Memorial Fund, Dr. Charles Baskerville, College of the City of New York, or to the treasurer, William J. Matheson, 21 Burling Slip, both in New York City.

FIFTH NATIONAL EXPOSITION OF CHEMICAL INDUSTRIES.

What promises to be the world's greatest exposition of the chemical industries is to be held in the Coliseum and First Regiment Armory, Chicago, Illinois, during the week of September 22, 1919.

Many features of general interest are being arranged in addition of the special programs of the several technical societies which will be in convocation with the exposition. The most important of these will be a symposium upon safety in the plant and mine, by speakers of authority, to be followed in the evening by a series of motion pictures of safety work in industrial plants all over the country, made under government supervision.

That the exposition will include much of interest to rubber goods manufacturers is indicated by the following roster of exhibitors identified with the rubber and allied trades: American Hard Rubber Co., Buffalo Foundry & Machine Co., Foamite Firefoam Co., General Bakelite Co., General Electric Co., Hunter Dry Kiln Co., Innis, Speiden & Co., Arthur D. Little, Inc., National Aniline & Chemical Co., Inc., the New Jersey Zinc Co., Products Sales Co., Schaeffer & Budenberg Manufacturing Co., Stresen-Reuter & Hancock, Inc., C. J. Tagliabue Manufacturing Co., Taylor Instrument Companies, Werner & Pfleiderer Co., Westinghouse Electric & Manufacturing Co., and Whittall Tatum Co.

These exhibits will include hard rubber and substitutes; machinery of various sorts, laboratory equipment and instruments; electrical apparatus, dryers and temperature controllers; colors, chemicals, accelerators and compounding ingredients; druggists' sundries and molded rubber goods; fire-extinguishers, and chemical engines.

IT IS TO YOUR BEST INTEREST TO PUT YOUR LIBERTY BOND INTEREST IN W. S. S.

A COURSE IN CORPORATION CHEMISTRY.

The Newark Technical School, 367 High street, Newark, New Jersey, announces that during the coming term Dr. Frederic Dannerth will deliver a course of thirty lectures on corporation chemistry, covering the five following general topics: Natural resources, executive departments, advisory departments, laboratory management, and the economic office.

Dr. Dannerth is a well-known industrial chemist and also the inventor of numerous secret processes employed in manufacturing rubber, resins, and plastics. The aim of his course will be to show how the principles of industrial chemistry are applied to the problems of manufacturing corporations. The lectures and seminars will be conducted in such a manner that the work of the course can be taken to advantage by the heads of the departments for purchasing, manufacturing, selling, engineering, law, and research, as well as by fourth-year men in chemistry.

Complete details can be had by addressing either Dr. D. R. Hodgdon or Dr. Frederic Dannerth at the school.

HEYDEN CHEMICAL WORKS SOLD FOR \$1,500,000.

The Heyden Chemical Works, Garfield, New Jersey, one of the largest concerns of its kind in the United States, and which was German-owned before its seizure by former Alien Property Custodian Palmer, has been sold to Allan A. Ryan for \$1,500,000. The property includes about seven acres of land on which stand an office, laboratory, seventeen mill buildings and a salicylic acid sublimation plant.

While the products of the concern are chiefly of a pharmaceutical character, a few are of interest to the rubber trade, namely, hexamethylene tetramine, a vulcanizing accelerator, and salol, a vulcanized rubber solvent.

AJAX RUBBER CO., INC., REPORTS PROGRESS.

The Ajax Rubber Co., Inc., New York City, in its recently published annual report for the year ended December 31, 1918, comments on the unusual aspects of the business year just completed, in spite of which it recorded a gain of 40 per cent in sales over those of 1917. A summary of the report shows the following:

ASSETS.	
Capital assets	\$4,034,823.20
Current assets	6,804,330.94
Organization expenses, insurance, etc.	112,521.15
LIABILITIES.	\$11,071,634.29
Capital stock, authorized and issued	\$7,100,000.00
Current liabilities, including notes and accounts payable, bonuses, taxes (including war profits and income taxes), etc.	2,839,425.44
Surplus, including profits for year after providing for Federal war profits and income taxes and deducting dividends paid	1,132,208.85
	\$11,071,634.29
PROFIT AND LOSS ACCOUNT	
Sales, less expenses, allowance for depreciation of plants and equipment, discounts, etc.	\$5,459,346.14
Administration expenses, bonuses, bad debts, interest on borrowed money, loss on Liberty Bonds, etc.	2,522,885.66
	\$2,936,460.48
Donations to war relief funds	\$21,092.23
Transfer from Federal war profits and income taxes (estimated)	1,700,000.00
	1,721,092.23
PROFIT FOR YEAR	\$1,215,368.25

CANADA PRODUCING RUBBER MACHINERY.

UP to two years ago practically all the machinery needed in the 23 rubber factories of Canada had to be imported, nearly all of it coming from the United States or Great Britain. More than one-half of these factories are owned and operated by the Canadian Consolidated Rubber Co., Limited, and it occurred to T. H. Rieder, formerly the president, that the machinery requirements of its own factories and such outside trade as could be secured would warrant a plant exclusively devoted to the production of special rubber machinery.

Accordingly the Rubber Machinery Shops were established, the plant shown here was erected at Kitchener, Ontario, and thus

was started the first and only concern devoted to this business in Canada. The buildings are of brick, of mill construction, fireproof, admirably adapted for the purposes intended, and fully equipped with the necessary machinery and tools.

Although the business is only 18 or 20 months old, between 100 and 150 men are steadily employed. Plans are already under way to cooperate with the city government of Kitchener: in

the event of a public technical school being established, the wood-working pattern-making, and machine-shop departments will form a valuable adjunct to the school.

The concern has established a most liberal apprenticeship system, has provided for the health and comfort of its employees, and in other ways made the work in its shops attractive. The business is flourishing and is constantly enlarging.

The executive staff is as follows: F. W. Harding, general manager; H. S. Poole, chief engineer; C. H. Harding, superintendent; Allen Clarke, production engineer, and C. W. Cressman, in charge of office.

CANADIAN NOTES.

The K. & S. Canadian Tire & Rubber Co., Limited, Weston, Ontario, is to build a factory addition which will double its present floor space and provide facilities for the manufacture of dipped goods. It now manufactures rubber sundries and half-heels and whole heels. This concern is also having plans prepared for a tire factory. Connections have been established on the Continent, in England and in the United States.

The Hercules Rubber Co., Limited, Brampton, Ontario, has completed its factory and began operations early in April. It is specializing on tires, tubes, and accessories.

The Premier Rubber Co., Limited, Guelph, Ontario, has changed its name to The Northern Rubber Company, Limited. F. E. Partridge is president and A. F. Dwyer, secretary. The concern will manufacture rubber footwear exclusively in its new four-story factory now building.

The Sterling Rubber Co., Limited, Guelph, Ontario, manufacturer of high-grade rubber specialties and sundries, is building an addition to its factory which will practically double its present floor space. The cost will be about \$25,000.

The Aero Cushion Inner Tire & Rubber Co. of Ontario, Limited, Wingham, Ontario, has purchased two factory buildings, one 200 by 80 and the other 165 by 65 feet, for which it is ordering machinery to manufacture its "Aero" cushion



PLANT OF THE RUBBER MACHINERY SHOPS.

inner tires. The officers of the company are: Thomas R. Bennett, president; M. E. Zurbrigg, vice-president; G. L. Bisbee, secretary-treasurer; E. L. Sherbondy, general manager; C. E. Judson, sales manager; directors—Thomas R. Bennett, M. E. Zurbrigg, Jesse Button, Edward L. Sherbondy and L. Kennedy.

The Regina Tire & Repair Shop, 1707 Scarth street, Regina, Saskatchewan, has acquired a site for the building of a new block. J. C. Wilson is manager.

D. Duncan has been appointed credit manager of the Calgary, Alberta, branch of the Dunlop Tire & Rubber Goods Co., Limited.

The Canadian press reports that The Goodyear Tire & Rubber Co., of Canada, Limited, has disposed of the balance of its preferred treasury stock, for \$200,000 of which employees subscribed at \$95.

NEW RUBBER INTERESTS OF TALMON H. RIEDER.

The Ames Holden Tire Co., Limited, Montreal, Quebec, has just been incorporated at \$3,000,000 to manufacture automobile tires and accessories. The incorporators are Talmon H. Rieder, Douglas L. McGibbon, Stephen J. LeHuray, and others. Property has been purchased at Kitchener, Ontario, where a factory will be built.

The Mount Royal Rubber Co., Montreal, Quebec, capitalized at \$500,000, has been incorporated to manufacture rubber tires and other kinds of rubber goods. The incorporators are Talmon H. Rieder, Douglas L. McGibbon, Charles H. Ancrum, and others. Mr. Rieder, who was formerly president of the Canadian Consolidated Rubber Co., Limited, Montreal, is president. The company is planning to build a \$100,000 factory.

Talmon H. Rieder was recently elected president of the Ames-Holden-McCready Co., Montreal, which manufactures shoes.

ALL-WHITE POLICE UNIFORMS.

The fashion of wearing white rubber coats and caps in rainy weather, started by the police department of New York City, has been adopted by other cities. The police force of Montreal, Canada, is equipped for heavy, rainy weather with white rubber coats, caps, and boots, and the accompanying picture shows the



MONTREAL POLICE IN WHITE RUBBER COATS

escort of a procession of returned soldiers on a recent Sunday morning. The coats, caps, and boots were manufactured by the Canadian Consolidated Rubber Co., Limited, Montreal, Canada.

JAPANESE RUBBER TOYS IN CANADA.

A report from the consul at Kingston, Ontario, comments on the replacing of German-made toys, including those of rubber, by those of other countries, with special reference to the development of the Japanese toy industry. In this connection he cites an article

which recently appeared in a Japanese magazine, from which it would appear that the Japanese product is largely supplanting the German. However, after careful investigation in his district, he finds that the American article, whether mechanical, metal or rubber, is preferred to any from Europe or Asia and that the annual trade is on the increase.

A MILL VILLAGE FOR THE HANES RUBBER CO.

The Hanes Rubber Co., Winston-Salem, North Carolina, is developing a 135-acre tract adjoining its factory as a modern mill village of the most approved type.



COTTAGES FOR HANES RUBBER CO. EMPLOYEES.

A tract of some 135 acres of attractive topography that will afford opportunity for expansion of both plant and village has been selected and a firm of well-known village planners are in charge of the work, thus assuring good architecture and pleasing landscape features.

The plans include several miles of graded, grass-bordered streets with concrete sidewalks. All traffic arteries lead to two important centers—the plant, and the community center, where will be located a building for entertainments, motion-pictures, a gymnasium, a swimming pool, also modern stores of various sorts.

A twelve-acre tract is reserved for expansion of the plant. Seven storage warehouses will be erected for raw materials, and two textile mills are projected nearby, to supply fabric needs, the first of these to be of 10,000-spindle equipment for the production of tire-building fabrics.

NEW TIRE INDUSTRY FOR BUFFALO.

The Madison Tire & Rubber Co., Inc., has erected in Buffalo, New York, a modern plant equipped with the most approved machinery for the manufacture of highest quality automobile cord and fabric tires and inner tubes. A large chemical laboratory, fully equipped with facilities for chemical control of raw materials, manufacturing process, and physical testing of the products, has been installed. In fact, provision has been made to render effective the determination of the management to place on the market only strictly high-class goods and to maintain them at a uniformly high standard of quality.

It is expected that the plant will begin operation early in July, on a daily production of 250 tires and tubes. The output will be steadily increased to full capacity of the equipment, approximately 1,000 tires and 1,000 tubes daily.

William Meyers, formerly with the Racine Auto Tire Co., is superintendent, and will be ably assisted by equally competent experts.

The main office and eastern sales department, 57th street and Broadway, New York City, will be in charge of Jean Nehmelmann, eastern sales manager, formerly with the Mohawk Rubber Co.

The control of the company is held by men connected with the United States Rubber Reclaiming Co., Inc., and with the banking firm of Ladenburg, Thalmann Co., New York.

THE RUBBER TRADE IN MASSACHUSETTS.

By Our Regular Correspondent.

THERE IS A WIDE-SPREAD MOVEMENT in this state to anticipate legislation and make 48 hours the legal measure of a week's work. Several of the rubber companies are already running their plants on this basis, and in most cases this is virtually an advance of wages, as the workers are paid the same amounts for the shorter week's work as they have received for the longer.

The Boston Rubber Shoe Co., Malden and Melrose; the Apsley Rubber Co., Hudson, and the American Rubber Co., Cambridge, are now running on the 48-hour schedule. The Converse Rubber Shoe Co., Malden, and the Hood Rubber Co., Watertown, are also running their plants 48 hours a week, this being so divided in five days that it gives the employees a double holiday, Saturday and Sunday. The Monatiquot Rubber Works Co. and the Mayflower Rubber Works Co., of South Braintree, are also running on this five-day, 48-hour schedule. In some of these latter plants the five-day schedule is an experiment, and is for the summer season only, but if the plan is successful, it may be adopted throughout the year.

* * *

The New England representatives of The B. F. Goodrich Co. convened in Boston late in May, where conferences were held with executives from the Akron headquarters at the company's branch store on Boylston street, the affair winding up with a dinner at the Copley-Plaza Hotel. Among those who addressed the meeting were: S. V. Norton, manager of truck sales; E. C. Tibbetts, advertising manager; H. H. Eager, assistant manager of truck tire sales; A. H. Leavitt, manager of pneumatic truck tire sales, and E. J. Hughes, manager of sales personnel.

A feature of the dinner was a reminiscent address by S. C. Lowe, of New Bedford, Massachusetts, the oldest Goodrich distributor in New England. A theatre party concluded the convention.

* * *

Another meeting worthy of notice, which was held too late to be reported last month, was the occasion of a visit of vice-president Homer E. Sawyer and general factory footwear manager Myron H. Clark, of the United States Rubber Co., to the plant of the Boston Rubber Shoe Co. Under the escort of G. L. Lawrence, factory manager, and P. C. Benjamin, superintendent, the two factories were inspected. At factory No. 1, where Mr. Sawyer served his apprenticeship, he was cordially greeted by a number of employees who were fellow-workers with him.

The Boston Rubber Shoe Association promptly called a special meeting for that evening at Fells Hall to entertain the visitors. An excellent dinner was served, at which Mr. Lawrence acted a toastmaster. President Guilford of the association welcomed the guests, and declared Mr. Sawyer an honorary member, Mr. Clark having previously been elected as such. Employment Manager John T. Cooper extended greetings on behalf of the employees and officials. Mr. Clark spoke earnestly of the importance of the best possible industrial relations and of the value of the foreman's influence. He referred to some of his experiences in London, and described the wonderful salvage plants there.

The address of Mr. Sawyer was of much interest as an interpretation of the desire of the company as to the relationship with the employees, and of his own personal interest in them, for he referred frequently to old friends in the factory whom he had never forgotten.

The Boston Rubber Shoe Association, which was responsible for this meeting, is composed of the heads of departments in the factories and offices of the company, and was organized in October, 1918, to bring about a better acquaintance. It has a membership of 120, and holds at least one social meeting a

month, and has been very successful in every way. Last month a ladies' night was held, in which more than a hundred couples participated. A concert, impersonations and character dancing preceded refreshments, after which a program of dancing occupied the remaining two hours before midnight.

* * *

Francis H. Appleton, the well-known reclamer, attended the four-day meeting of the Ancient Arabic Order of the Mystic Shrine at Indianapolis last month, being a delegate of Aleppo Temple, of Boston, of which body he is now Chief Rabbani. Mr. Appleton is very enthusiastic regarding this order, of which there are over 8,000 members in this state.

* * *

Abraham Sydean, general manager of the Plymouth Rubber Co., Canton, Massachusetts, is a member of the board of directors of the Citizens' National Bank, a new institution which commenced business in Boston the 19th of last month.

* * *

The Hood Rubber Co. is offering to preferred stockholders 10,000 shares of 7 per cent preferred stock, being all that remain unissued of such stock authorized to be issued at not less than par by a vote of the stockholders in July, 1917. Each holder may subscribe for one new share for each four shares, or fraction thereof, that he held June 19, and arrangements have been made to dispose, by private subscriptions, of any stock not taken by the preferred stockholders.

* * *

At a meeting of the stockholders of the Mayflower Rubber Works Co., South Braintree, Massachusetts, George E. Jean-dreux was elected vice-president, and Richard K. Fields, secretary. Both these gentlemen were formerly connected with the New Jersey Car Spring & Rubber Co., Inc., of Jersey City, New Jersey.

* * *

William Whitlock, for over 15 years with The Fisk Rubber Co., Chicopee Falls, Massachusetts, has severed his connection with that concern, and will take a vacation of several months before again entering business. He has been connected with the tire business many years, at first with the G. & J. Tire Co., Indianapolis, Indiana, where he rose from foreman to superintendent, holding that position until he resigned to become assistant superintendent of the Fisk plant. Mr. Whitlock was very popular at the factory, and he leaves with the best wishes for his future of the entire Fisk organization.

* * *

Ernest C. Clark, formerly vice-president of the Clark Rubber Manufacturing Co., Franklin, Massachusetts, has severed his connection with that concern, and is now with Beck, Van Sien Co., exporter, New York City. He is succeeded by his father, Maurice C. Clark, who was for several years with the Banigan Rubber Co., and since then has superintended the erection and installation of a number of rubber mills and reclaiming plants.

* * *

W. Irving Bullard, manager of The Merchants National Bank of Boston, Boston, Massachusetts, has been elected treasurer of the National Association of Cotton Manufacturers.

* * *

Charles T. Wilson Co., Inc., New York City, crude rubber dealer, has opened an office in the Winthrop Building, 1 Water street, Boston, Massachusetts, under the management of Marston Haviland.

* * *

A. G. McClurg has been appointed factory manager of the Carlisle Cord Tire Co., Andover, Massachusetts.

* * *

The Revere Rubber Co., Chelsea, Massachusetts, a subsidiary of the United States Rubber Co., has elected the following

officers for the ensuing year: directors—Walter S. Ballou, Charles C. Case, Samuel P. Colt, H. E. Converse, James B. Ford, Lester Leland, Charles B. Seger, and Elisha S. Williams; officers—Samuel P. Colt, chairman; Lester Leland, vice-chairman; Elisha S. Williams, president; W. H. Blackwell, treasurer; John D. Carberry, secretary; F. L. Bunker, assistant treasurer and assistant secretary; F. O. Miles, assistant treasurer.

* * *

The Fisk Rubber Co., Chicopee Falls, Massachusetts, has disposed of its new issue of \$15,000,000 of seven per cent cumulative first preferred stock, tax-exempt in Massachusetts, on which dividends are payable on the first days of February, May, August and November.

* * *

Stickney, Tirrell & Co., importers of chalk and manufacturers of whitening, have removed to the Old South Building, Washington and Milk streets, Boston, Massachusetts. Their factory is in East Boston.

THE RUBBER TRADE IN OHIO.

By Our Regular Correspondent.

THE SCARCITY of home accommodations in Akron has furnished the stimulus for the movement to be undertaken by the Akron Home Owners' Investment Co., the president of which is Harvey S. Firestone, who is also president of the Firestone Tire & Rubber Co., Akron. Mr. Firestone has worked out a plan by which the \$5,000,000 company will erect 5,000 houses in Akron and assist those who wish to buy them on first mortgages with a proper interest rate, or on second mortgages without commission and a low rate of interest. Titles will be examined free of charge and architects' plans may be consulted in the company's office. It is hoped to provide shelter for 20,000 persons.

AKRON NOTES.

The Firestone Tire & Rubber Co., Firestone Park, Akron, has organized a colony of deaf employees under the direction of B. M. Schowe. The Firestone company has the honor of having in its employ the first deaf men ever employed in the Akron rubber industry. It is not generally known that deaf people, and deaf mutes, as well, make exceedingly expert workmen. The company also has in its employ a man who is totally blind, but who can turn out tire repair work equal to that produced by those possessed of full sight.

The Firestone company has also organized a class to study the sign language used by the deaf, under the direction of B. M. Schowe of the Labor Department. The lessons will be given twice a week and will be conducted in the sign language. The spoken word will be forbidden in the classroom.

* * *

The Goodyear Tire & Rubber Co., Akron, now employs more than 500 deaf mutes in its various departments. A special class in the factory school is conducted for their benefit and they have their own social and athletic organizations.

* * *

Miss Merry C. Echols, a graduate of Akron City Hospital, whose experience has included private nursing and institution work as the superintendent of Massillon City Hospital for eight years, has been secured by the Firestone Tire & Rubber Co., Akron, Ohio, for the position of superintendent of nurses. She had recently been resident instructor at the Akron City Hospital.

* * *

Francis A. Seiberling, president of the Goodyear Tire & Rubber Co., Akron, has been elected president of the newly formed Para Co., which is to build a \$750,000 hotel and office building where the Hotel Buchtel now stands. The company is incorporated for \$40,000 and has obtained a 99-year lease of

the hotel property, dating from April 1, 1919, but construction of the new ten-story building will not begin until late this autumn or early next spring, due to unexpired leases of tenants of the present structure.

The Goodyear Tire & Rubber Co., Akron, has appointed E. M. Sonntag special representative of the company at Madrid, Spain, to engage in promotional and investigational work throughout the chief Spanish cities.

The Goodyear Tire & Rubber Co., Akron, is building a new clubhouse for employees, opposite the factory office on Market street and Goodyear avenue, 170 by 400 feet. It is to be of brick and steel construction, five stories high, and will include all the modern industrial clubroom features, such as gymnasium, bowling alleys, showers, rest-rooms, reading-rooms, and a theatre which will seat 2,000. A corporation school with classrooms, study hall and auditorium is also provided, while on the top floor will be a lunch and dining-room on the cafeteria plan. The building will cost about \$500,000.

Fifty boy scouts with their officers will enjoy a motor-truck camping trip in trucks furnished by the Goodyear Tire and Rubber Co., Akron, beginning June 26, 1919. The boys will cover about 3,000 miles and pass through nine states, visiting the historical and scenic points along a route across the upper part of New York, through Niagara Falls, Utica, Syracuse, and Albany, across New Hampshire to Portland, Maine, and return via Boston, Providence and New Haven to Ithaca, Lake Chautauqua, and Youngstown. The trucks will be provided with pneumatic tires and have double-deck upper and lower sleeping berths.

* * *

The athletic team of The B. F. Goodrich Co., Akron, at the Memorial Day meet, rolled up a score of 59, as compared with that of 45 by the Goodyear team, 40 by Firestone, and 9 by Miller. The entry list totaled over 180, and all contestants were bona fide members of the concerns represented.

All point winners in this meet will be entered in the national factory employees' track and field meet, to be held at Gary, Indiana, July 4, 1919, under the auspices of the American Industrial Athletic Association. Horseshoe pitching and wrestling have been added to the regular list of events.

Boy Scouts connected with the Goodrich company are building a log cabin at Rex Lake from plans drawn by Henry Bishop, of Department 18-U. The cabin will be a model Scout home, with folding tables that pull to the ceiling, a 4 by 6-foot fireplace, and spacious porch, besides the customary benches, bunks and lockers.

* * *

The Mohawk Rubber Co., Akron, is completing the factory wing which will house portions of the cord-tire building and curing departments.

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The American Rubber & Tire Co., Akron, has contracted for another factory wing, to be of standard mill brick and steel construction, five stories high, to cost approximately \$100,000.

* * *

Fred J. Horn, recently discharged from the Army, will represent Fred Stern & Co., crude rubber importers, New York City, in Akron, assisted by Paul Bloom.

CLEVELAND NOTES.

The Polson Rubber Co., Doan avenue and Nickel Plate Railroad, Cleveland, is planning to build a large modern factory to take care of its increased business in tire accessories.

The Ideal Tire & Rubber Co., Cleveland, has increased its capital from \$2,000,000 to \$5,000,000, consisting of \$2,500,000 worth of both preferred and common stock.

MISCELLANEOUS OHIO NOTES.

The Henderson Tire & Rubber Co., Bucyrus, has bought a three-acre site on Goodale street, Columbus, where it is building a two-story factory, 100 by 400 feet, for which new and improved machinery and equipment has been purchased. The factory is expected to be in operation by October 15, 1919.

* * *

The Long Wear Rubber Co., Elyria, Ohio, has taken over the production and sales of the Quality Tire & Rubber Co., Anderson, Indiana, and will shortly build an addition to its plant at Elyria. Both factories will be under the supervision of Frank W. O'Brien, general manager.

* * *

The annual meeting of the stockholders of the National Tire & Rubber Co. was held on Wednesday, June 11, 1919, when a financial report of the year's business was read, showing a prosperous year's business, exceeding all previous records. The sale of the remaining unissued capital stock, both common and preferred, was outlined as the initial step in a comprehensive plan for immediate expansion of the business that provides for the trebling of the output.

At the meeting of the board of directors, the following officers were elected: C. L. Merwin, president; S. L. Warner, vice-president and general manager; C. W. Helman, secretary; R. B. Taggart, treasurer.

C. E. Miley has been elected vice-president in charge of sales of the National Tire & Rubber Co., East Palestine, Ohio. Mr. Miley is widely known in the tire industry through his ten years' service as general sales manager for the McGraw Tire & Rubber Co. His affiliation promises an aggressive policy of broadening the field of distribution of the National company's products.

* * *

The Clarke Rubber Co., Elyria, Ohio, recently elected the following officers and directors: H. A. Beck, president; W. H. Clarke, vice-president; E. P. Clement, treasurer, and C. A. Squire, secretary. Directors: E. T. Clauser, C. W. Smalley, C. D. Lehman and J. A. Reublin.

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The Rainbow Tire & Rubber Co., Delaware, Ohio, has acquired a factory site of 24 acres of land between the Pennsylvania and Big Four railway systems, and is planning a two-story building, 100 by 300 feet. The officers are: Charles E. Ross, president; H. L. Gilbert, vice-president; C. A. Morrison, treasurer; George E. Caylor, secretary and attorney. The directors include the above and H. E. Fegley and C. A. Waggoner.

* * *

The board of directors of The McGraw Tire & Rubber Co., Cleveland and East Palestine, Ohio, recently set aside some of the common capital stock of the company for purchase by their employees at par value on the following plan. The stock may be purchased for cash or by deferred monthly payments. When first payment is made, all cash dividends are credited to the subscriber's account as additional payment until the full price has been paid. Provision is made to extend time of payment in cases of unavoidable inability to meet the regularly due installments.

The McGraw company are demonstrating their interest in promoting the welfare of their employees, having recently presented each with individual insurance policies under the industrial group plan. The company has purchased a large tract of land near the factory, with plenty of water facilities, and plans a park for employees' use. Swimming, boating, and fishing facilities will be provided; also athletic fields and a golf course.

THE FOUNDER OF THE MCGRAW COMPANY.

EDWIN C. MCGRAW, founder and president of The McGraw Tire & Rubber Co., East Palestine, and Cleveland, Ohio, is a man of varied business interests, and the industry with which his name is most prominently identified, he established when well past middle life.



EDWIN C. MCGRAW.

Born in Pittsburgh, Pennsylvania, in 1857, and educated there by private tutors, he became a member of the firm of J. A. McGraw Brothers at the age of 23, and while with this concern he was interested successively in brick manufacture, and the hotel and real estate business. In 1908, to start his son, R. W. McGraw, in business, he secured the patent right on what was then known as

the "Vertical Fabric Thread Tire," and contracted with a Dayton, Ohio, concern to manufacture it.

In 1909 he decided to build a tire plant, and selecting East Palestine, Ohio, as a good location, he started with an initial production of eight tires a day. Additional capital and an enlarged plant has brought the product up to 5,000 tires and 6,000 tubes a day. A year ago, the company changed its policy from that of manufacturing popular-priced tires to the production of high-grade tires, and today the fabric and cord tires being turned out carry the 5,000-mile guaranty, and in addition the McGraw solid motor tires command a prominent place in the trade.

In all this progress, Mr. McGraw has been the moving spirit. Though spending the winter months at Miami, Florida, he keeps in close touch with the home office, and by his advice and counsel directs the business. He is a member of the Pittsburgh Athletic Association, is a life-member of the Elks, and is president of the Fidelity Trust and Savings Co., and a director of the Fidelity Trust Co., both of Miami, Florida, where he is also First Commodore of the Biscayne Yacht Club.

THE RUBBER TRADE IN RHODE ISLAND.

By Our Regular Correspondent.

THE MANUFACTURING RUBBER INDUSTRY of Rhode Island is at present in a quiescent state and marking time, awaiting the resumption of rush conditions which is believed to be inevitable in the replenishing of regular stocks during the reconstructive period. In the meanwhile the larger plants have closed down for repairs, and in some instances to make improvements. The indications on every hand are for an indefinite period of activity following the readjustment of conditions that is now under way. The manufacturers are still handicapped by the shortage of labor, especially skilled workmen, as comparatively few of the men returning from service have as yet resumed their former positions in the mills, preferring, at least during the summer months, a continuance of outdoor life.

Notices were posted on May 24 in the Woonsocket Rubber Co.'s plant, the Alice rubber mill at Woonsocket, and the Millville rubber boot mill at Millville, employing 2,500 hands; and in the National India Rubber Co.'s plant at Bristol, employing more than 4,500 operatives, announcing that, effective June 2, these footwear mills would adopt a 48-hour weekly schedule instead of the 54-hour schedule, and that rates of pay would be so readjusted that the help would earn as much wages in the 48 hours as they had been making in the 54.

The American Wringer Co., Woonsocket, employing more than 700 hands, went on a 48-hour a week schedule on June 2, instead of the 49½ hours that it has been operating on for several months, and wages were readjusted so that the pay of the operatives is not diminished. W. Maxwell Reed, plant manager, has arranged the new schedule into five working days, so as to close the factory on Saturdays and thus allow the operatives a whole holiday. With the resumption on June 2, after the Memorial Day shut-down, the plan also started running nights as well as days to take care of increasing orders.

A new time schedule has also become operative at the rubber cloth factory of the O'Bannon Corporation at West Barrington, whereby the mill starts at 7 o'clock in the morning instead of a quarter of an hour earlier, the lapse being made up at the end of the work day. A night, as well as a day shift is being operated, double shifts of men are engaged, and the plant is being operated almost continuously.

The factory of the National India Rubber Co. in Bristol, which was closed for a period of two weeks the latter part of May, resumed operations on June 2. Douglas Morey, who resigned recently as manager of the planning and industrial relations departments at the National Co., has gone to New Haven, as New England manager of the National Thrift Bond Corporation. Lawrence S. Edwards is head of the planning department, and Andrew W. Anthony has taken over the industrial relations department. James P. Murphy, former superintendent at the Narragansett Rubber Co.'s mill at Bristol, has accepted a position with the National Co.

Fire, which threatened the entire shoe division of the National company's plant, broke out on the afternoon of June 19 in the training department of the shoe room, located on the third floor of building No. 3. The sprinkler system flooded the room when the fire started, and the water penetrated through the floor into the stitching room on the second floor, and also into the paper-box-making department on the first floor and the wooden-box factory in the basement. The damage in the stitching and box departments was entirely by water, the stock and machinery being soaked. The shoe division was closed about a week, affecting about 3,000 hands.

A new pump house in addition to the present plant is being erected on the south side of the old pumping station of the National company, at the foot of Church street, to enlarge the salt-water pumping plant. This will greatly facilitate the pumping of salt water from Bristol harbor for cooling purposes.

The management of the National India Rubber Co., at Bristol, has formulated plans for an active campaign of Americanization among its operatives in connection with the general policy of the concern for the general welfare, education and uplift of employees. At the last meeting of the Bristol public school board a proposal was received from the company that a teacher from the school department be assigned to the company's works to conduct a school for five hours a day, five days a week, for 50 weeks in a year, for the purpose of teaching general education with special attention to Americanization. The proposition has been taken under consideration by the school committee.

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Work has been commenced by the Woonsocket Rubber Co.

on a two-story brick building at the Alice Mill plant for the offices of the industrial relation department, which includes the employment and planning departments. The building measures 62 by 21 feet, with a one-story ell that is to be 21 by 10 feet. The second story is to be an assembly hall, where the overseers, forewomen and the various committees of the employees of the concern will meet for business purposes, and also where dances and other social gatherings will be held.

* * *

Twelve salesmen of the United States Rubber Co. arrived at the Alice Mill plant, a subsidiary of the corporation, about the middle of the month to enroll in the Woonsocket division of the training school, which is being established in the principal factories of the corporation throughout the country. After remaining a week, these left and on June 28 another class arrived, the attendance for the second week being about 60. The salesmen were instructed in the construction of all the varieties of the newer types of rubber shoes, and also given an opportunity to become acquainted with every part of the shoe. The starting of the school is to prepare the salesmen for the coming winter campaign.

The first class was entertained at luncheon in the factory restaurant one noon as guests of Henry C. Wagner, factory manager, and Herman Fahrenholz, superintendent, and at the close of the week's session a dinner was given the departing salesmen. The members of the party included F. H. Buckingham and T. H. Furlong, Buffalo, New York; Champ Beaumont and R. B. Carney, Baltimore, Maryland; H. D. Brow and C. O. Braden, Omaha, Nebraska; J. L. Kenham and W. A. Quinn, Boston, Massachusetts; C. J. Milikan and A. Baumgarten, New York City, and B. L. Andrews and M. Melman, Chicago, Illinois.

* * *

Colonel Samuel Pomeroy Colt, chairman of the executive committee, and former president of the United States Rubber Co., started on June 1 for Camp Colt, located at the foot of Mt. Katahdin, Maine, with a party of guests, whom he will entertain at his camp for three weeks, enjoying outdoor life, fishing, hunting, etc. The members of the party included Mr. and Mrs. Edwin A. Barrows, Colonel and Mrs. Harold J. Gross of Providence; Mr. and Mrs. Andrew W. Anthony; Roswell C. Colt of Bristol; Mrs. Florence Miller Beresford, Mrs. Imogene Waldron; Mrs. John W. Bicknell of New York; Countess Eleanor Moroni of New York; Charles B. Seger of New York, president of the United States Rubber Co.; Walter S. Ballou of Providence; Dr. I. Hart Noyes of Providence, and George E. Leighton of Bristol.

* * *

The Narragansett Cotton Mills, Inc., 614 Jackson Building, Providence, with mills at Apponaug, Rhode Island, will start the manufacture of tire fabric as soon as the installation of machinery is completed.

* * *

According to the last report of the Rhode Island factory inspector, dated January, 1919, there are fifteen rubber firms in the state employing 8,630 persons as follows: 4,878 men, 3,276 women, 184 boys under 16 and 292 girls under 16. The sanitary condition of five of these places of business was reported as good, of two very good, and of eight excellent.

THE RUBBER TRADE IN NEW JERSEY.

By Our Regular Correspondent.

AN INVOLUNTARY PETITION in bankruptcy has been filed in the United States District Court at Trenton against the India Tire & Rubber Co., of New Brunswick, New Jersey, by August C. Streitwolf, of that place, on behalf of three creditors of the concern. Mr. Streitwolf acted for the Rolfe Building Materials Co., the New Brunswick Iron Works, and Anthony Roth, Jr., all of New Brunswick.

Recently the company filed a voluntary petition in bankruptcy, through R. E. Watson, and this action was held by Vice-Chancellor Lane to constitute a contempt of court, as Elgin McBurney had already been named receiver for the concern through proceedings instituted in the Court of Chancery. The voluntary bankruptcy action has since been dismissed. It is now said that the creditors represented by Mr. Streitwolf, including the New Brunswick men and a number in New York City, will seek to handle the affairs of the concern, instead of having them directed through the Chancery Court.

William J. B. Stokes, head of the Thermoid, Home and Joseph Stokes rubber companies, Trenton, is now acting as chairman of the board of trustees of the big fund being collected for the family of a Trenton policeman who was slain by automobile bandits.

The Ajax Rubber Co., Inc., Trenton, has caused the arrest of the ringleader of the gang of thieves that recently stole several hundred dollars' worth of tires from its plant. The gang operated in boats along the Delaware & Raritan canal at night. Entrance was gained each time by climbing through a window when the watchman was in another part of the plant. Feet of land along the Reading railroad and are planning to build a new one-story factory on it to take care of increased business.

Charles W. Carl's Sons, Trenton, New Jersey, manufacturers of steel tables, steel calendar shells, steel stock bins, tire racks, and other specialties for the rubber trade, have acquired 550

William H. Ivens' Sons are erecting a two-story brick and steel building, 60 by 60 feet, on Beakes street, Trenton, for the manufacture of hard rubber specialties.

The members of the Trenton Rubber Manufacturers' Association have recently made their annual donation of \$100 to the Trenton Day Nursery.

The Capitol Tire & Rubber Co., of New York, has opened a salesroom at 103 South Warren street, Trenton.

W. Bradford Stryker, for nine years connected with the Acme Rubber Manufacturing Co., Trenton, looking after the trade in central New Jersey and eastern Pennsylvania, and who recently returned from overseas, where he was a member of the 303d Battalion, Heavy Tank Corps, has leased a property on East State street and opened a tire and tube establishment. Mr. Stryker will devote his time to the territory he has been covering for the Acme company, while Ralph Hackett will be in charge of the office and store.

The plant formerly owned by the Diehl Manufacturing Co., in Newark avenue, Elizabeth, New Jersey, and later transferred to the Militor Corp., of New York, has been purchased by the Overland Rubber Co., a subsidiary of the Willys-Knight interests. The purchase price is reported to be \$265,000. The new owners manufacture rubber goods and automobile tires.

The Vulcanized Rubber Co., Morrisville, New Jersey, contemplates erecting a modern office building and recreation room and dining-room for the employees. The company recently bought a large plot of ground at Bridge street and Pennsylvania avenue for the purpose of expansion.

The young people of the Clinton Avenue Baptist Church, Trenton, recently held a novel "rubber social," and the admission was anything in the line of rubber. The rubber articles were donated to the worthy poor.

The girls employed at the new plant of the Semple Rubber Co. on Lambertson street, Trenton, recently held a dinner in the new dining-room at the factory. The Semple company has given the employees permission to give dinners whenever they so desire.

The Globe Rubber Tire Manufacturing Co., Trenton, has built a small addition to its storehouse. The company has taken out another permit for a one-story building on Prospect street, to cost \$1,000.

The Brighton Mills, Passaic, New Jersey, manufacturers of tire fabrics and cotton yarns, are having plans prepared for small houses in Allwood, one of the suburbs, and in the issue of its house organ, "Warp and Weft," for June 6, 1919, calls attention to the desirability of these plans for employees who desire to own their own homes. Five illustrations of attractive houses are shown, including several different styles.

The Broadway Tire Jobbers, Inc., 250 West 54th street, New York City, has received authorization to do business in New Jersey, and has opened an auto tire exchange at 255 Halsey street and a public service tire station at 270 Halsey street, Newark, New Jersey.

PACIFIC COAST NOTES.

By Our Regular Correspondent.

ONE of the most novel events of interest to the tire trade was the tire changing contest recently held at Pomona, one of the thriving suburbs of Los Angeles and Pasadena. The results were as follows:

First, Pomona Tire Co., represented by Elmer N. Rose, using a Diamond tire; prize, Bulletin trophy cup and \$25; time, 5 minutes, 52 seconds. Second, Wurl's Garage, Pomona, represented by Claude Berry, using a Hartford tire; prize, \$15. Third, G. P. Gafford, Upland, represented by Angus McCallum; prize, \$10.

Herold Daig, representing Casa Blanca Garage, Ontario; E. Austin, representing Emil Lindstrand, Monrovia, and J. E. Granger of Granger's Garage, Spadra, were the first three men to finish in the race, but were disqualified by the judges at the end of the contest, when their tires failed to show the 80 pounds pressure.

Working like mad with every nerve tingling, the contestants went through the stunt without a mishap. At each step the excitement on the part of the audience grew more and more intense as the contestants reached the pumping-up stage. When all ten were battling with the back-breaking task of pumping up the tires to the required pressure the enthusiasm reached its limit. In a remarkably short space of time the tasks were finished, when the judges examined the air and decided upon the winners, who were announced by A. V. Storer, secretary of the Citrus Belt Auto Trades Association.

When it is considered that it takes the average person perhaps about 25 minutes to change a tire and pump it up again, the winner's time of 5 minutes and 25 seconds may be considered remarkable. The record in a similar contest held in Oakland in 1917 was 3 minutes and 43 seconds, with 85 pounds as the pressure. The best time in 1919 so far was also made in Oakland, being 4 minutes and 25 seconds at 80 pounds. Another record at the same pressure was made at Stockton in 5 minutes and 10 seconds.

John Hannerwaas, vice-president of the Pacific Rubber Co., has been discharged from the Navy, where he served as an ensign through the war, and has resumed his duties with the concern in Los Angeles.

Mayor Higgins, of Brawley, in the Imperial Valley, in addition to his political and municipal duties, has accepted the agency for Globe tires in that district, representing the Hawley King Co., of Los Angeles.

* * *

The Bell Rubber Co., of Los Angeles, has started retreading solid tires with a new process, and reports remarkable success. Charles Fleming, vice-president of the concern, says that at least 45 per cent of the cost of a new tire is saved by their method and the guaranty given is the same as that on a new tire, the retreaded product often running as high as 20,000 miles. George T. Bell, president of the concern, has been in Akron, Ohio, looking over the construction of a factory with a capacity for turning out 100 reconstructed tires a day.

* * *

F. A. Seiberling, president of the Goodyear Tire & Rubber Co., Akron, Ohio, who is also president of the Lincoln Highway Association, will be present at the dedication ceremonies of the completion of the 17-mile strip of highway in the desert regions of Utah, which will take place July 20, 1919. The construction was financed by the Goodyear company.

* * *

R. R. Colby, local manager of the Oldfield Tire Co., has received a letter from Mr. Oldfield, stating that he has already closed enough contracts to give the concern \$4,000,000 worth of business this year, and that with contracts yet to come they may run over \$10,000,000.

* * *

William T. Brooks, of Mesa, Arizona, dealer in "Horseshoe" tires for that territory, has been in Los Angeles, the guest of Roy R. Meads, president and general manager of the Pacific Rubber Co., distributor for California and Arizona. Mr. Brooks spent thirteen months in overseas service, and participated in the battles of Chateau-Thierry, St. Mihiel and the Argonne, assisting in the operation of observation balloons.

* * *

F. C. Millhoff, general sales manager of The Miller Rubber Co., of Akron, Ohio, was a recent visitor in Los Angeles. He predicted a larger demand for tires this year, due to the increase in automobilism. His company is making heavy duty tire equipment for motor trucks, and most of the testing of these tires is done in California, where many of the stage lines are equipped with them. Among them are the El Dorado stage line, the delivery trucks of the Bradford Baking Co., the White Bus Line, running from Los Angeles to San Bernardino and intermediate points, and also the Big Bear Mountain stage.

* * *

F. V. Springer, vice-president of the Hewitt Rubber Co., and Charles W. Harris, president of the Hewitt Rubber Co. of California, have been in Los Angeles conferring with J. B. Wood, distributor of Hewitt tires for this territory.

* * *

The Western Wheel Co., on Los Angeles street, has been chosen distributor of Firestone truck tires as well as Firestone rims. This company, which was formerly the Phineas Jones Co., is one of the best-equipped wheel-manufacturing plants in the entire West.

* * *

The B. F. Wade Tire & Rubber Co., which has taken over the distribution of the Knight and the Blackstone fabric tires for Southern California, will henceforth concentrate exclusively on the wholesaling of these lines. The Los Angeles retail business of the company has been purchased by Howard S. Reed, who will continue to conduct it at 512 West Eighth street. Mr. Reed was formerly in the tire business in San Bernardino, giving up his business to enlist in the Navy, where he won a commission as ensign during the war. Fred C. Schweitzer, sales manager, has just returned from seventeen months' service overseas.

Manager Bershon, of the Bershon Tire Co., announces that the Victor Rubber Co., of Springfield, Ohio, will shortly make deliveries of their cord tires, and are starting shipments to the coast.

* * *

Hugo Hoffstaedter, general manager of the Polack Tire & Rubber Co., which is distributed in California and Arizona by the Pacific Rubber Co., was a recent visitor in Los Angeles, calling on distributors and dealers in the district.

* * *

William H. Yule, until recently manager of mechanical sales for The B. F. Goodrich Rubber Co., Akron, Ohio, has resigned and will leave the rubber industry to take charge of an orange and fruit ranch which he has lately purchased near Santa Barbara, California. Mr. Yule has been with the Goodrich company since 1908.

* * *



WILLIAM H. YULE.

The Goodyear Tire & Rubber Co., 104 North 14th street, Portland, Oregon, is building a second story addition to its present building, giving 10,000 square feet of additional floor space, the building being 50 by 200 feet. This is a branch of The Goodyear Tire & Rubber Co., Akron, Ohio, and has no connection with the Goodyear Rubber Co., 67 Fourth street, Portland, Oregon, with which, through the similarity in names, it is sometimes confused.

* * *

The Western Rubber Co., 521 West 8th street, Los Angeles, California, manufacturer of tires and tubes, has changed its name to the Bradstreet Rubber Co.

* * *

E. H. Trader, sales manager of The American Rubber & Tire Co., Akron, Ohio, has left on a trip through the West, intending to spend the greater part of the summer with the distributors of American-Akron products in Los Angeles, San Francisco, and Seattle. On his way out he will stop in Denver and will return by way of Canada.

* * *

The New Jersey Zinc Co., New York City, has established warehouses in San Francisco and Los Angeles, and will hereafter distribute its zinc oxide, lithopone, and other products to the Pacific Coast trade from these centers.

THE SOUTHWEST COTTON INDUSTRY

That Southern California is destined to be the outlet for the rapidly growing cotton industry of Arizona and the Imperial Valley is evident from the significant business developments in that direction. A \$100,000 cotton-buying company, with its full capitalization paid up, has been incorporated in Los Angeles, having connections with most of the important cotton buyers in the South and East. K. M. Turner, of New York, is president; H. M. Fraser, of New York, and Richard A. Fanto, of San Francisco, are vice-presidents; J. Robinson, of New York, is treasurer, and G. C. Dennis, a Los Angeles attorney, is secretary. The new firm is known as Turner, Kuhn, Frazer, Inc. According to Mr. Dennis, the company has already made market connections with all the big cotton-buying centers of the world, and plans to make Los Angeles the concentration point for all the cotton shipping in the Southwest, its idea being that baled cotton should go to eastern and foreign markets by boat from Los Angeles harbor, after being transported here by rail.

A new cotton compress is to be erected at Los Angeles harbor and has been authorized by the city council, the Harbor Commission being instructed to enter into a contract for the installation of the plant at a cost not to exceed \$80,000. It will be

operated by the Harbor Commission as a public utility. Traffic Manager Matson of the commission says:

With a high density compress located at this port, not only will Southern California cotton for export to the Orient be brought here, but also that which goes to Europe at present through Galveston move this way.

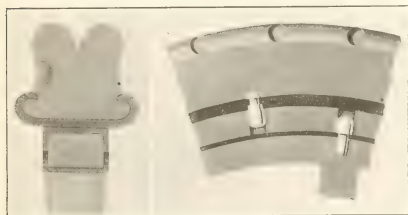
Local interests have filed with the United States Railroad Administration an application for a concentration rate so that Los Angeles will be made a point of concentration for cotton shipments. I have taken up with the Railroad administration the subject of adjusting export rates on cotton from the Texas cotton belt.

I am also in receipt of information from L. M. Fowler & Co., that several hundred thousand bales of Texas cotton, in addition to that of Southern California and Arizona, already are in sight for moving through this port the coming season, providing a high density compress is installed in time.

DUOPLEX CUSHION TIRE IN CALIFORNIA.

The National Auto Wheels Corp., Wausau, Wisconsin, will begin, on September 1, the construction of another factory near Los Angeles, California. The company manufactures wheels of a new type that are claimed to be practicable and will do away with pneumatic tires.

The outer part of the wheel is a non-skid resilient cushion tire mounted on a metal rim and guaranteed for 20,000 miles. The rim fits over a rubber cushion, inserted between the felloe and rim, and is guaranteed for the life of the car. It is con-



CROSS SECTION.

TRANSVERSE SECTION.

structed to give the utmost resiliency and absorb all shocks and rebound. It is protected on both sides by steel channels, and is insurance against crystallization.

The manufacturers claim 150 per cent saving in tire expense during the life of the car. While the initial expense in equipping a car with these wheels is greater than that of pneumatic tires, it is declared that ultimately the economy of the device will be demonstrated.

EAGLE-PICHER BUYS INTEREST IN MIDLAND CHEMICAL.

The Eagle-Picher Lead Co., Chicago, Illinois, has acquired an interest in the Midland Chemical Co., of the same city, manufacturer of "Sterling" lithopone. The offices of the Midland company will be removed to adjoin those of the Eagle-Picher company in the Continental & Commercial National Bank Building. The new board of directors of the Midland company is as follows: O. S. Picher, president; W. T. Sheffield, vice-president and secretary; T. S. Brown, Jr., treasurer; A. W. Ayer, superintendent; and H. G. Clopper. A sketch of Mr. Clopper appeared in THE INDIA RUBBER WORLD, June 1, 1919.

The General Asbestos & Rubber Co., Charleston, South Carolina, manufacturer of asbestos brake lining, steam packing, asbestos textiles, etc., are installing a power plant, which is being erected by Lockwood, Greene & Co., Atlanta, Georgia.

RUBBER FROM SAGE BRUSH AND GREASEWOOD.

CONGRESSMAN JOHN E. RAKER of California has introduced a bill in the House of Representatives for an appropriation of \$5,000 "for the investigation and study of methods and testing sage brush and greasewood, which may be used for producing rubber, alcohol and acetic acid, including their utilization." This bill is, in effect, the same as one introduced by Mr. Raker during the 1913 session of Congress but which did not get beyond the committee to which it was referred. The present bill has been referred to the Committee on Agriculture, and ordered to be printed, and is designated as Bill H. R. 1129.

Mention might be made in this connection of the investigations now in progress or recently completed, bearing on the subject of producing rubber from plants growing in the Western and Pacific States, which have been described at some length in THE INDIA RUBBER WORLD. The work of Professors H. M. Hall and Thomas H. Goodspeed is reported in the issue of June 1, 1918, naming plants containing from 2 to 10 per cent of rubber, notably the Giant Rabbit Bush (*Chrysothamnus*) and the Dwarf Rabbit Bush (*Ericameria*).

In the April 1, 1919, issue of THE INDIA RUBBER WORLD, Professor Hall is reported as saying, after further investigation of this subject, that the total amount of wild shrub in California with a rubber content is "so great that it is safe to say that there is enough rubber present to constitute an emergency supply in case we ever get into a war in which our importation would be curtailed, but the extraction of this would be an expensive process, since the average content for the whole West is probably not more than 2½ per cent, and even in the best districts it will not be more than 4 or 5 per cent on the average."

This investigation has proved the existence of over 70 species of rubber-producing plants growing in California, and Professor Jones, who is assisting Professor Hall, is extending his investigations over Utah, Nevada, Idaho, Wyoming and Colorado. Professor Hall describes as the most interesting the *Chrysothamnus nansous*, or "Common Green," which produces a rubber said to be superior to that from the guayule plant of Mexico. Ten or fifteen years ago endeavors were made to exploit commercially the *Picradenia floribunda utilis*, or "greasewood" of Colorado, but the result was not encouraging. However, the subject of a native rubber supply grown in the United States is one worthy of still further investigation, and the result of Mr. Raker's resolution will be watched with interest.

CONNECTICUT NOTES.

The Kelly-Springfield Tire Co., New York City, is represented in Connecticut by G. G. Winsor, who is general supervisor of the depots at New Haven, Hartford, and Bridgeport. A. C. Peoble has charge of the New Haven district and H. A. Goodale of the trade in New Haven, with headquarters at 88 College street and a service station at 274 Crown street. In Hartford, at 41-45 High street, C. C. Chaffee is in charge of the district and W. H. Lacey of the city trade. In Bridgeport, at 359 Fairfield avenue, George A. Davidson is in charge of the district and R. L. Whittington of the city trade.

The Hartford Rubber Works' Co., Hartford, Connecticut, a subsidiary of the United States Rubber Co., has elected the following officers: C. B. Whittlesey, president; E. Hopkinson, vice-president; J. P. Krogh, treasurer, and J. D. Carberry, secretary.

The McMinn Tire Co., Inc., has been formed in Bridgeport, Connecticut, by Stanley P. McMinn and Harold F. Blanchard, formerly on the "Motor World," associated with George P. McMinn, until recently superintendent of the Detroit, Michigan, plant of the Barrett Co. Headquarters are at 629 Fairfield avenue, and the officers are: S. P. McMinn, president; H. F. Blanchard, vice-president, and George McMinn, secretary-treasurer.

The Economic Revolution in British Rubber Factories.

THE BRITISH have a reputation for meeting emergencies coolly and solving problems sensibly. During the darkest days of the war they considered the after-peace development of industry and decided that war losses must be made up by hard work, and that capital and labor should work happily together. It was realized that both the volume and quality of output would have to be increased through the active co-operation of labor and capital to raise the general level of productive capacity and efficiency, to maintain a high standard of workmanship and to improve working conditions. Organization must be improved, a better spirit created, and all friction and waste eliminated, and it was agreed that labor, as a party to industry, should have a voice in matters directly concerning its special interests, such as wage rates and conditions of employment.

Machinery was then created for securing united action in the pursuit of common ends and for adjusting points involving competing interests, the organization being powerful enough to insure the acceptance of its decisions with confidence by both sides, with the knowledge that they would be generally adopted.

As a result, every organized branch of British labor is being invited by the Government to participate in industrial management, and every employer's organization is being asked to take organized labor into partnership. British labor wants shorter hours, higher wages, better working and housing conditions, but more important than these it wants a share in indus-

trial management, and it is getting it with the full consent and cooperation of employers.

At the head of the new system of industrial government which is being developed in England there is a permanent council or parliament, composed of an equal number of representatives of the workers and of the employers, which literally makes laws for British industry. In each trade there is a national council comprising an equal number of representatives of employers and employees, while in each section of the country there is a district council and in each shop, factory or mine there is a workers committee made up in the same way.

Thus the British working-man and woman is getting a share in management and a real copartnership between capital and labor is being effected. The present system is by no means perfect, but it provides a basis of development and in bringing about a peaceful economic revolution has probably avoided a revolution of violence such as now threatens France. Thinking men believe it will bring greater prosperity to the British people as a whole, mitigate the labor situation and effect no damage to other than profiteering interests.

The objects, functions and constitutions of the National Joint Industrial Council of the Rubber Manufacturing Industry, and its district councils and works committees, which follow, are typical of the organizations being effected in various other industries.

THE NATIONAL JOINT INDUSTRIAL COUNCIL OF THE RUBBER MANUFACTURING INDUSTRY

Constitution Adopted at the First Meeting of the Council, Held at Montagu House, Whitehall, London, July 16, 1918.

OBJECTS.

To secure the largest possible measure of joint action between employers and workpeople for the safeguarding and development of the rubber manufacturing industry as a part of national life and for the improvement of the conditions of all engaged in that industry.

It will be open to the Council to take any action that falls within the scope of its general object. Among its more specific objects will be the following:

1. The consideration of the proposals for District Councils and Works Committees as put forward in the Whitley Report, having regard in each case to any such organizations as may already be in existence.
2. The consideration and adoption of measures for securing the inclusion of all employers and operatives in their respective organizations, and for securing the loyal observance by them of collective agreements.
3. Regular consideration of wages, hours, and working conditions in the industry as a whole.
4. The consideration of the existing machinery for the settlement of differences between different parties and sections in the industry, and the establishment of machinery for this purpose where it does not already exist.
5. The consideration of measures for securing maximum production and regular employment.
6. The encouragement of research and invention, with a view to perfecting the products of the industry.
7. The adequate safeguarding of the rights of operatives inventing or designing improvements.
8. Inquiries into special problems of the industry, including the comparative study of the statistics, organization and methods of the industry in this and other countries, and, where desirable, the publication of reports.
9. The improvement in conditions, with a view to removing danger to health in the industry, and the provision of special treatment, where necessary, for workers in the industry.
10. The supervision of entry into, and training for the industry, and co-operation with the educational authorities in arranging education in all branches for the industry.
11. Cooperation with the industrial councils of other industries to deal with problems common to them and the rubber manufacturing industry.

12. Representation of the needs and opinions of the industry to government departments and other authorities.
13. The consideration of any other matters that may be referred to it by government departments or other authorities.

CONSTITUTION.

MEMBERSHIP.

The Council shall consist of twelve representatives of the employers and twelve representatives of the operatives, appointed by the following organizations:

ASSOCIATIONS OF EMPLOYERS.

India Rubber Manufacturers' Association, Limited.	} Twelve representatives.
British Rubber Tyre Manufacturers' Association Limited	
Rubber Shoe Manufacturers' Association	

TRADE UNIONS.

Amalgamated Society of India Rubber, Cable, and Asbestos Workers	Four representatives.
National Amalgamated Union of Labour	Two representatives.
National Union of General Workers	Two representatives.
Workers' Union	Two representatives.
Amalgamated Society of Gas, Municipal and General Workers	One representative.
Waterproof Garment Workers' Trade Union	One representative.
Total	Twelve representatives.

REAPPOINTMENT.

One-third of the representatives of the said association and unions shall retire annually and shall be eligible for reappointment. Members of the Council shall retire at the end of the first and second year in an order to be determined by lot, and thereafter on the expiration of three years' membership.

COMMITTEES.

The Council may appoint such committees for special purposes as it may consider necessary, and define their powers.

CO-OPTED MEMBERS.

The Council shall have the power of appointing on committees or allowing committees to co-opt such persons of special knowledge not being mem-

Members of the Council may serve the special purposes of the Council, provided that on such committees:

- (a) The two sides of the Council shall be equally represented, and
(b) Any appointed or co-opted members shall serve only in a consultative capacity.

OFFICERS.

The officers shall consist of a chairman, a vice-chairman, a secretary or secretaries, and such clerical staff as it may think fit.

When the chairman is a representative of the operatives, the vice-chairman shall be a representative of the employers, and *vice versa*. The chairman (or, in his absence, the vice-chairman) shall preside at all meetings, and shall have a vote, but not a casting vote.

The Council shall be empowered to appoint and maintain a secretary or secretaries, and such clerical staff as it may think fit.

All honorary officers shall be elected by the council at its annual meeting for a term of one year, and, subject to the condition that chairman or vice-chairman from the employers' side shall be succeeded by a representative from the operatives' side, shall be eligible for reelection.

MEETINGS OF THE COUNCIL.

The ordinary meetings of the Council shall be held as often as necessary and not less than once a quarter. The meeting in July of each year shall be the annual meeting. A special meeting shall be called on the requisition of six members of the Council. Seven days' notice of such meeting shall be given, and the business of the meeting stated in the notice.

VOTING.

The voting shall be by show of hands, or otherwise, as the Council may determine. No resolution shall be regarded as carried unless it has been approved by a majority of the members present on each side of the Council.

QUORUM.

Seven members from each side shall constitute a quorum of the Council.

FINANCE.

The expenses of the Council shall be met by the two sides of the Council in equal proportions.

Areas, Functions, and Constitution of District Councils, Adopted by the National Council at a Meeting Held at Montagu House, Whitehall, London, September 25, 1918.

AREAS OF DISTRICT COUNCILS.

- | | |
|--|----------------------------|
| 1. London District | 4. Lancashire and District |
| 2. West of England. | 5. Edinburgh District. |
| 3. Birmingham and the Midlands District. | 6. Glasgow District. |

FUNCTIONS OF DISTRICT COUNCILS.

The main functions of the District Councils shall be as follows:

1. The consideration of any matters that may be referred to them by the National Joint Industrial Council, and executive action within their district in connection with decisions arrived at, and matters referred to them by the National Council.

2. To make recommendations to the National Joint Industrial Council on any matters affecting the well-being of the industry as a whole.

3. To take executive action within their respective districts in connection with matters of purely local interest, including matters referred to them by works committees, subject to the right of the National Council to require notice of all decisions, as per Clause 10 hereof, and, within ten days, to veto any such action if it be found to involve the interests of other districts. The secretaries of the National Council shall communicate to the District Councils within seven days from the receipt of the minutes, as required by Clause 10 hereof, as to whether in the opinion of the officers of the National Council such action involves the interests of other districts, and a final decision must be made by the National Council within a further fourteen days. If the National Council do not exercise their right to veto any particular action of the District Councils, such decisions shall come into operation retrospectively from the date of the decision by the District Councils.

4. Cooperation with the District Councils for other industries to deal with problems of common interest.

5. Where no adequate machinery exists for the settlement of differences between parties and sections of the industry, such differences as cannot be settled within an individual factory or workshop shall be referred to the District Council, and failing a settlement by the District Council, such differences shall be referred to the National Council.

CONSTITUTION OF A DISTRICT COUNCIL.

6. MEMBERSHIP.

The Council shall consist of — members, appointed as to one half by associations of employers, and as to the other half by the trade unions, the unions shall be entitled to representation on District Councils in the proportion of their members employed at the associated firms in the respective areas. At least one member from each side of the National Council shall be members of the District Council in their area.

Associations of Employers. No. of Representatives.

Trade Unions. No. of Representatives.

Total. No. of Representatives.

Trade Unions. No. of Representatives.

Total. No. of Representatives.

7. REAPPOINTMENT.

The representatives of the employers and trade unions shall retire annually, and shall be eligible for reappointment by their respective associations.

The following named men constitute the employers' representatives:

FOR THE INDIA RUBBER MANUFACTURERS' ASSOCIATION, LIMITED.

P. A. Birley, Chas. Macintosh & Co., Limited, Manchester.
Hugh C. Coles, Wm. Warne & Co., Limited, London.

J. T. Goudie, The Leyland & Birmingham Rubber Co., Limited, Leyland, Cheshire.

E. Healey, W. & A. Bates, Limited, Leicester.
Sir G. Charles Mandelberg, J. Mandelberg & Co., Limited, Albion Water-proof Works, Manchester.

Stuart A. Russell, The India Rubber, Gutta Percha & Telegraph Works Co., Limited, Hertford, London.

William C. Wilson, The India Rubber Manufacturers' Association, Limited, Manchester, joint secretary.

FOR THE BRITISH RUBBER TYRE MANUFACTURERS' ASSOCIATION,

F. C. Baisley, The Dunlop Rubber Co., Limited, Aston Cross, Birmingham.

F. W. Hinde, The Avon India Rubber Co., Limited, Melksham, Wiltshire.
Alexander Johnston, The North British Rubber Co., Limited, Castle Mills, Edinburgh.

R. H. Mallett, The Beldam Tyre Co., Limited, London.

FOR THE RUBBER SHOE MANUFACTURERS' ASSOCIATION.

The Hon. F. H. Hamilton Smith, The New Liverpool Rubber Co., Limited, Rice Lane, Walton, Liverpool.

A like number of operatives represent the Amalgamated Society of India Rubber, Cable and Asbestos Workers, National Amalgamated Union of Labour, National Union of General Workers, Workers' Union, Amalgamated Society of Gas, Municipal and General Workers and the Waterproof Garment Workers' Trade Union.

elections and trade unions. Casual vacancies shall be filled by the organization concerned, which shall appoint a member to sit until the end of the current year.

8. COMMITTEES.

The District Council may delegate special powers to any committee it appoints. The reports of all committees shall be submitted to the District Council for confirmation, except where special powers have been delegated to the Committee, and the District Council shall have power to appoint on committees or allow committees to co-opt such persons of special knowledge, not being members of the District Council, as may serve the special purposes of the Council, provided that on such committees:

- (a) The two sides of the Council shall be equally represented, and
(b) Any appointed or co-opted members shall serve only in a consultative capacity.

9. OFFICERS.

The officers shall consist of a chairman, a vice-chairman, a secretary or secretaries and a treasurer or treasurers.

When a chairman is a representative of the operatives, the vice-chairman shall be a representative of the employers, and *vice versa*. The chairman (or, in his absence, the vice-chairman) shall preside at all meetings, and shall have a vote, but not a casting vote.

The District Council shall be empowered to appoint and maintain a secretary or secretaries, and such clerical staff as it may think fit. It shall be empowered to pay them such remuneration as it may think fit. All honorary officers shall be elected by the Council at its annual meeting for a term of one year, and, subject to the condition that a chairman or vice-chairman from the employers' side shall be succeeded by a representative from the operatives' side, shall be eligible for reelection.

10. MEETINGS OF THE DISTRICT COUNCIL.

The ordinary meetings of the District Council shall be held as often as necessary and not less than once a quarter. The meeting in the month of May shall be the annual meeting. A special meeting of the District Council shall be called within seven days of the receipt of a requisition from one-third of the members of the District Council, with a minimum of two. The matters to be discussed at such meetings shall be stated upon the notice summoning the meeting.

Copies of the minutes of all meetings of District Councils shall be forwarded to each member of the National Council within one week of the meeting.

11. VOTING.

The voting, both in District Council and in the committees thereof, shall be by show of hands or otherwise as the District Council may determine. No resolution shall be regarded as carried unless it has been approved by a majority of members present on each side of the District Council.

12. QUORUM.

The quorum shall be a majority of the members on each side of the District Council.

13. FINANCE.

The expenses of the District Council shall be met by the two sides of the Council in equal proportions.

14. RELATION OF DISTRICT COUNCILS TO THE NATIONAL INDUSTRIAL COUNCIL AND TO THE GOVERNMENT.

The functions and constitutions of District Councils shall be submitted to the National Council for their approval.

No communications shall be addressed to government departments by District Councils, but must be forwarded through the National Industrial Council.

WORKS COMMITTEES.

Objects, Functions and Constitution of Works Committees, as adopted by the National Council at a Meeting Held at 16 Deansgate, Manchester, on November 27, 1918.

THE ——— COMPANY, LIMITED.

WORKS.

OBJECTS, FUNCTIONS AND CONSTITUTION OF WORKS COMMITTEES.

OBJECTS.

1. The objects of the Committee are:
 - (a) To provide a recognized channel of communication between the employees and the firm, in order to secure the largest possible measure of joint action between them in any matters relating to the welfare of the workers, and to the general advancement of the business and the employees as a whole.
 - (b) To consider any matters that may be referred to it either by the management or by the employees of the works.
 - (c) To present to the firm through the Committee any suggestion which, after full consideration, it is decided should be put forward.

FUNCTIONS.

2. The functions of the Committee shall be purely advisory or consultative, the intention being that by discussion of matters between employees and the management a mutually satisfactory conclusion may be reached in respect of questions discussed.

Amongst other suitable matters for discussion may be quoted the following:

1. Welfare and social subjects.
2. Suggestions.
3. Working hours.
4. Regularity of employment.
5. Output.
6. Improvements in methods and machinery.
7. Discipline.
8. Grievances.
9. Disputes.

CONSTITUTION.

3. The committee shall be a joint committee consisting of not more than twelve representatives of the management and, unless otherwise agreed by the parties, not more than twelve representatives of the employees engaged in one or other of the manufacturing operations of the India rubber trade. The employees' side of the Committee shall be elected by ballot by constituencies into which the works are divided as shown in the particulars contained in Part II, and according to the rules therein mentioned. The representation shall be based on the principle that all departments shall be directly represented according to their importance, the smaller departments being grouped in such a way that their interests can be properly looked after by one representative.

4. No one shall be eligible for membership of the Committee who is under 21 years of age and who is not actually working in the factory and who has not a service qualification of one year with the firm and three years in the industry, unless with the consent of the management.

5. The representatives of the management on the Committee shall be appointed by the firm.

6. The period for which employee members shall hold office shall be twelve months, ending on the ——— day of ——— in each year, and the appointment and period of office of management members shall be at the discretion of the firm.

7. Women shall be entitled to election on the Committee as provided for in Part II hereof.

8. In cases where a member of the Committee leaves the employment of the firm, such member shall thereupon cease to be a member of the Committee. Casual vacancies may be filled either by ballot or otherwise as the Committee may determine.

OFFICERS.

9. The officers shall consist of a chairman, who shall be nominated by the firm, and two secretaries, one appointed by the management, and the other by the operative members of the Committee.

MEETINGS.

10. The Committee shall meet once a month, at a date and time to be fixed by the firm, but extra meetings may be held when necessary on the requisition of four members, who shall state the special object for which the meeting is to be held.

11. The employee members shall be paid for the time occupied at meetings on the basis of the sum lost by them through their absence from work.

12. Meetings shall take place at the works, and may be summoned informally by verbal notice to the members.

13. The presence of one half of the members from each side of the Committee shall be necessary to form a quorum.

14. An agenda shall be prepared by the secretaries for all meetings, and items may be included by either or both sides of the Committee.

15. No delegate shall bring forward a complaint at a meeting unless it has first been ascertained that the same has been referred for settlement through the ordinary channels.

16. Any matter which it is desired to bring forward for discussion at the regular monthly meeting should be notified to the Secretaries at least three days before the date of the meeting.

17. No recommendation shall be regarded as made, or resolution passed, unless it is approved by a majority on each side of the Committee.

18. Regular minutes shall be kept of the proceedings at meetings of the Committee.

CONNECTION WITH DISTRICT AND NATIONAL COUNCILS.

19. The Works Committee may by resolution decide what matters shall be referred to the District Council for decision.

20. The Works Committee may not deal with wages questions or other matters which would affect the district as a whole unless with the consent of the District Council.

21. The Works Committee shall respect any decisions of the National Joint Industrial Council of the Rubber Manufacturing Industry and the District Council thereof as to the functions and work which may be properly undertaken by the Works Committee.

FINANCE.

22. The expenses of the Committee shall be borne by the Firm.

PART II.

REGULATIONS REGARDING BALLOTING FOR OPERATIVES' REPRESENTATIVES.

1. Elections of operatives' representatives on the Committee shall be held in the month of ——— in each year.

2. Any employee in a department fulfilling the service qualification may be nominated for election, provided a nomination form signed by three employees entitled to vote is lodged with the returning officer not later than 14 clear days before the date fixed for the election.

3. A serving member of the Committee shall be eligible for reelection.

4. The form of nomination shall be as follows:
To the Returning Officer for Election of Works Committee.
We, the undersigned employees in the ——— department, and
entitled to vote, hereby nominate ——— for election to represent
Works Committee as representative of No. ——— constituency.

5. The returning officer and counters shall be appointed by the management for the first election, and thereafter by the Works Committee.

6. A register of operatives, having at least one month's service with the firm as the period entitling them to vote, shall be settled as soon as possible, and at least one month before the first committee is appointed, and may be amended from time to time by the inclusion of new employees and the deletion of names of operatives left or deceased.

7. The ballot shall be secret, and numbered balloting papers, giving the names of those nominated, shall be issued to voting operatives.

8. No canvassing shall be allowed in the works, and balloting papers will be collected in the departments by the returning officer or his assistants.

9. The certificate of the returning officer as to the members elected shall be final.

10. The regulations contained in this section (Part II) as to the arrangements of constituencies and balloting may be amended by resolution of the committee, subject to the approval of the District and National Councils.

11. The following is a specimen scheme for the division of the Works into constituencies, showing the allocation of representatives. Each firm will draw up a list to meet its own particular conditions.

DIVISION OF WORKS INTO CONSTITUENCIES.

Departments.	Representatives	
	Male.	Female.
1	1	1
2	1	1
3	1	1
4	1	1
5	1	1
6	1	1
7	1	1
8	1	1
9	1	1
10	1	1
11	1	1
12	1	1

These councils and committees of the rubber and allied industries aim to solve the problems of industry by agreement. They plan to adjust the hours of work instead of striking or resorting to Parliamentary legislation; they specify wage rates instead of fighting for them; they standardize products, eliminating wasteful competition, cooperating in selling, and helping to link together all the industries of the country into a great national business for the common good.

This new democracy of British business is laying the foundation for an industrial nation far greater than Germany could ever hope to build up through government subsidies, for the coming power of British industry lies in the cordial relations developing between capital and labor. As Arthur Henderson, secretary of the British Labor Party, aptly puts it, labor and capital in England have recognized themselves as the "trustees of industry."

The Rubber Trade in Great Britain.

By Our Regular Correspondent.

TRADE RESTRICTIONS.

MOVEMENTS with regard to restrictions on trade are now becoming more general and no doubt those which particularly interest the readers of this paper are well known to them before this correspondence appears in print. Of special interest was the announcement on May 14 that all restrictions on the import of rubber goods were taken off and that tires and rubber boots could be imported to the extent of 50 per cent of the 1913 import. As the great rush of American tires was in 1915 and 1916, the present concession does not amount to so very much for America, but more for France, as her chief tire factories are situated in the non-invaded area. The proofing branch of the trade is quite indifferent as to the removal of import restrictions, especially with regard to America.

While on this point I may say that I was discussing the relative importance of British and American proofing works the other day with a certain patentee. He said that he had been surprised to learn how much more important both in size and output the British works are as compared with the American. He was, I may say, new to the trade, but he had imagined that the reverse was the case.

Restrictions still hold on dress preservers which have come to us largely from America, although British firms seem to be very chary in risking capital in the necessary plant to enable them to compete successfully with America. It is pointed out that the rubber plate hitherto made only in America and Germany accounts for only one-tenth of the cost of the finished article. The unrestricted imports of vulcanite goods will hardly suit those rubber manufacturers who have laid themselves out for this branch during the last four years. The general idea seems to be that practically all our vulcanite goods in the past came from Germany, but certain buyers say that much has always come from America and that America is quite Germany's equal as regards quality. A recent feature of our trade has been the manufacture of small articles like pipe mouth-pieces and magnets by firms who used to get the goods from Germany and found that British rubber firms would do the business only at too high a price. Moreover, in many cases the quality was unsatisfactory. It will be interesting to see whether these makers of vulcanite mainly for their use continue to supply their own requirements or revert to buying the imported goods.

Now that restrictions are off, buyers of American reclaimed rubber can now get brands which have been almost unobtainable for more than two years. It cannot be said, however, that business is very brisk, as regards reclaimed, though the extensions in progress at our largest works indicate that the future is looked forward to with confidence.

W. T. GLOVER & CO., LIMITED.

At the annual meeting of this Manchester cable-making concern on May 12, the important announcement was made by the chairman, A. L. Ormerod, that arrangements had been made by Vicker's Limited, the well-known armament firm of Sheffield and Barrow-in-Furness, to acquire a controlling interest in the company. The terms to be paid by Vicker's are 17s. 6d. for every £1 preference share, the market quotation, and five ordinary Vicker's shares for every four ordinary £1 Glover's shares. The chairman regarded the deal as being eminently satisfactory to the shareholders of Glover's. This is by no means Vicker's first absorption or amalgamation, in view of afterwar enterprise, two or three other important deals of the kind having already been put through.

It was pointed out by the chairman that Vicker's ordinary

shares had a dividend of 12½ per cent while Glover's had never exceeded 7½ per cent, this being the dividend for 1918, viz., 5 per cent plus 2½ per cent bonus, all tax free. It is understood that no change will take place in the management and that the works will continue their usual routine.

THE REVIVAL OF SPORTS.

The sporting goods branch of the trade, which was very badly hit by the war, is now having a good time, as cricket, lawn tennis, etc., have come again into their own. Players, however, are finding their expenses much increased, as not only are club subscriptions generally increased, but all accessories have gone up. For instance, lawn-tennis balls of match quality are now retailed at 2 shillings each, the great rise being due to the cost of labor and the felt cover. Some surprise has been expressed at the golf ball being still at its pre-war price, but this is not so much concerned with labor and there is no textile present; moreover, I believe I am right in saying that you can use last year's stock. In some cases the lawn-tennis balls are turned out finished by the rubber works; in other cases the large dealers in sporting goods buy the uncovered balls and put on the felt or melton cover to which a pure rubber coat has been applied by some rubber works in the piece. This is the procedure with the recognized tournament balls.

MANDLEBERG'S IMPROVEMENTS IN THE TREATMENT OF BALLOON FABRIC.

Two patents have recently been taken out by J. H. Mandleberg and J. Mandleberg & Co., Limited, with this object, one claiming the impregnation of the fabric with petroleum jelly, and the other giving the details of the impermeable rubber mixing which is applied to the impregnated fabric. The detailed account of the rubber mixing is interesting, mainly because it forms somewhat unusual subject matter for a patent, such details usually being kept as what is known as a secret process. It is stated in the patent that the invention provides an improved composition mainly consisting of india rubber for impregnating and coating balloon fabrics imparting a higher degree of impermeability relatively to the weight of the composition per unit of area treated than the composition hitherto employed for the said purpose, so that for any predetermined degree of impermeability a fabric or material treated with the improved composition will be of less weight than similar material treated with known compositions. The composition comprises india rubber, the nerve of which is completely destroyed, wax, litharge and sulphur in specified proportions.

With regard to this, it seems to me that there must be great difficulty in knowing what mixings or formula have been used by the various manufacturers of balloon fabric. It may be that the patentees have examined all other makes and proved the absence of wax and litharge either jointly or separately, though it would be impossible to testify to the number of coats put on, the exact quality of the rubber, the precise physical condition of the sulphur and so on. For these reasons it has always seemed to me to be a very difficult thing to protect a rubber formula—that is in the way of proving.

Interesting points about the details given are the exclusive use of fine, hard Pará, and the use of precipitated sulphur, an article which dealers have always found it very difficult to sell to the trade. As regards solvents, the use is advocated of a solvent having a low boiling point, such as very pure coal-tar naphtha or benzene. It is somewhat curious to find these two products lumped together, as there is considerable difference between their respective boiling points and it is rare to find

them satisfactorily employed for the same purpose in spreading. As many as 16 coats are given to the fabric to obtain the best result and vulcanization is effected in steam at 285 to 295 degrees F. for $1\frac{1}{2}$ to 2 hours, with $\frac{1}{4}$ -hour rise, the high temperature having, it is stated, very beneficial results in the impermeability of the fabric.

At the annual meeting of the firm, held on May 2, the chairman, Sir Charles Mandelberg, gave some interesting references to the war-time activities of the firm.

The subject of gas-mask material had been investigated, he said, in their laboratory and a large amount supplied to the Government. With regard to airship fabrics also, special investigation had been carried out, this material having been made in large quantities as well as airship envelopes and complete kite balloons. The profits for 1918 were £91,089, which, with the last substantial carry forward allowed a dividend and bonus of $22\frac{1}{2}$ per cent in the ordinary shares, the sum of £82,772 being carried forward. Speaking of the future, the chairman, like many others in a similar position, referred to the present demands of labor and the influence that increased working expenses cannot fail to have upon our capacity to compete in the export trade.

A HUGE NEW CALENDER.

David Bridge & Co., Limited, of Castleton, Manchester, has made recently to the order of a well-known firm of rubber manufacturers, a large motor-driven three-roll universal calender. The size is remarkable, as it weighs 65 tons, the center roll being $9\frac{1}{2}$ tons, while the top and bottom are $8\frac{1}{2}$ tons. It runs at the rate of $2\frac{1}{2}$ yards per minute.

The special gearing of the machine allows of the following effects being produced:

1. All the rolls can be run at even speed.
 2. The bottom and middle rolls can be run at friction speed while the top and middle rolls remain at even speed.
 3. The bottom and middle rolls can be run at even speed while the top and middle run at friction speed.
 4. Both the top and bottom rolls can be run at friction speed.
- The rolls, which are 30 inches in diameter, are made of deep chilled cast iron.

HOOLEY HILL RUBBER & CHEMICAL CO.

In connection with the disastrous explosion which took place in June, 1917, at this factory in the Manchester district, litigation has been in progress with the insurance companies, which were willing to pay for the damage caused by the fire which broke out, but not for the further damage done by the subsequent explosion of dangerous material being made for the Government. The arbitrator gave judgment in favor of the insurance companies, but stated a case for the High Court which upheld his judgment. The Hooley Hill company, therefore, gets £12,740 instead of double that amount. The wrecked building was one which had been specially fitted up for Government work and was not the main building connected with the ordinary trade of the company.

INFLAMMABILITY OF CARBON BLACK.

The article on this subject in the May issue of THE INDIA RUBBER WORLD, is of interest as dealing with a topic that is little understood in rubber work, i. e., the danger of explosion when the atmosphere of a room is heavily laden with fine particles of a combustible substance. I find that possible danger from this source is very rarely apprehended. Similar tests with regard to the propagation of flame in such dusts have been carried out in our special testing stations in connection with colliery explosions, though I have not seen any reference to them in rubber journalism. From the article quoted, carbon black does not seem to be particularly dangerous and now that methods of working it which obviate the production of a dusty atmosphere are known, there seems no reason to apprehend anything disastrous in the rubber-mixing room.

BASEBALL IN ENGLAND.

Baseball teams have been organized at various centers where Americans are now in residence, notably the Universities of Cambridge, Dublin, Manchester and Birmingham, and so the public is getting an insight into the game which is generally described by the non-expert as a combination of cricket and rounders. I had an opportunity recently of witnessing my first game, a contest between Manchester and Birmingham Universities, and shall now take more interest in the accounts which appear from time to time in THE INDIA RUBBER WORLD of matches at summer outings. In the match in question Manchester won by 23 runs to nil, but the one-sidedness of the game did not matter to the audience, which had no idea what the score was. The applause was concentrated on feats most closely resembling those of cricket, such as catching the ball in the long field and hits out of the ground. Whether you understand the game or not it is certainly interesting and exciting to watch. It was a thoughtful act of the management to provide each of those who paid for admission with a small pamphlet containing a diagram and description of the game. Though I could not read the letter and watch the game at the same time, I elected to keep the literature for home perusal.

THE MENACE OF THE TRUSTS.

It can hardly escape notice that the rubber goods import restrictions favor two branches of the home trade more than any others and that these two branches, viz., tires and footwear, have special trade organizations of their own and are thereby able to bring pressure upon the authorities. As an addendum to what I said in these notes in the May issue of THE INDIA RUBBER WORLD, a government committee has been considering the extension of trade organization and combinations from the point of view of public interest. The contention is made that these trade combinations are necessary in order to meet foreign competition abroad and this view is evidently held in America, to judge by the Webb Act recently passed. Whatever may be the case in countries which have long lived under protection the British, who have lived under free trade, are more than apprehensive that these various combinations mean high prices all around to home consumers. The government committee is agreed that it is desirable to institute a tribunal to examine into the operation of our trusts and combines in the interest of the home consumer on the lines of the tribunals which already exist in American and some of our colonies.

INSULATED WIRE AND CABLES FOR AUSTRALIA.

The Minister of Customs of Australia has published a new Customs regulation governing the standard of test and quality for imported electric cables. Some of the cables previously imported have been unsafe to use, leading to the fusing of the conductors and outbreaks of fires.

Each coil of insulated wire imported must bear a label stating the manufacturer's name and address, length of coil, date of manufacture, gage of conductors, and the insulation resistance. These regulations are effective July 1, 1919.

RUBBER STATISTICS FOR BRITISH INDIA.

The Madras Presidency, British India, through all ports, imported from the Atlantic Coast of the United States during the year ended March 31, 1918, manufactured rubber goods as follows: tires and tubes, \$3,666; miscellaneous, \$10,570.

A NETHERLANDS RUBBER FACTORY.

The Naamloze Vennootschap Vereenigde Nederlandsche Rubberfabrieken is located at Doorwerth, Province of Gelderland, Netherlands, and controls other factories at Doorwerth (near Wageningen), Hoogeveen, and Amsterdam, while it maintains branch offices at Groningen, Rotterdam, Leeuwarden, and in Amsterdam at 647 Keizersgracht.

Miscellaneous Foreign Notes.

MARSEILLES CRUDE RUBBER IMPORTS INCREASING.

SOME years ago the quantity of rubber imported through Marseilles into France was negligible. French factories imported their African and South American rubber through Bordeaux, Le Havre and Antwerp, while their plantation rubber came through London. But, since the war started, there has been a great increase in the Marseilles imports, with a corresponding decrease of imports through the other ports mentioned. In 1916 Marseilles rubber imports already amounted to 6,019,640 pounds and they increased in 1917 and 1918, but the French Government no longer publishes the exact amounts.

CHAMBER OF COMMERCE ESTABLISHED IN PERSIA.

Under the auspices and with the financial support of the Persian Government, a chamber of commerce has been organized in Teheran, to consist of not less than six nor more than eighteen members, one-half to be appointed by the Minister of Commerce and one-half by the merchants of the city. Sub-chambers may be organized in other Persian cities. The object of the organization is to strengthen and extend commercial relations with the United States, and to this end American trade catalogs and publications are desired. They should be addressed to the Chamber of Commerce, Teheran, Persia, and will be available to those interested, at a reading room maintained by the Chamber.

NORWEGIAN-AMERICAN EXHIBITION IN CHRISTIANIA.

September 10-24, 1919, has been set as the dates between which the Norwegian-American Exhibition will be held in Christiania, Norway.

MARKET IN SWITZERLAND FOR TIRES AND TUBES.

It is expected that after the peace treaty is signed there will exist a large demand in Switzerland for rubber tires and tubes.

NEW ZEALAND IMPORTS OF RUBBER BOOTS AND SHOES.

A comparison of available figures for the years 1914 and 1917 covering the imports of the chief classes of rubber footwear into New Zealand and the countries of origin shows that while the United States has not even held her own in some of these specialties, Japan has made considerable gain. Canada, also, has increased her trade, particularly in rubber boots. This is partly due to the difference in tariff and the improved quality of Canadian rubber footwear of the present day.

Articles and Countries of Origin.	1914.		1917.	
	Dozen Pairs.	Value.	Dozen Pairs.	Value.
Molded rubber and cork soles:				
From United Kingdom .....	.....	\$5,329	.....	\$8,492
Canada .....	.....	798	.....	1,840
Japan .....	.....	14	.....	871
United States .....	.....	389	.....	842
Other countries .....	.....	389	.....	82
Totals .....	.....	\$6,545	.....	\$11,416
Galoshes, rubber overshoes, gymnasium shoes, etc.				
From United Kingdom	24,167	\$86,624	16,191	\$65,722
Canada	3,160	22,746	3,800	24,955
Japan .....	.....	.....	1,680	5,621
United States	2,850	17,807	2,401	16,585
Other countries	405	1,289	.....	.....
Totals	30,582	\$128,466	24,220	\$112,883
Rubber boots:				
From United Kingdom	223	\$11,246	67	\$3,621
Canada	360	11,689	886	27,705
Australia	14	744	29	871
United States	1,272	48,942	1,449	50,563
Totals	1,869	\$72,621	2,431	\$82,760

Further figures comparing the value of the imports of rubber goods other than tires show that during the month of January, 1915, these amounted to only \$12,652 as against \$13,621 for the month of December, 1918.

The consul at Auckland states as his opinion that if favorable adjustment were made of the duties imposed on the importations of these goods, American business could be considerably increased in New Zealand as American goods are well received and sell readily in competition with other makes of similar quality.

SIAMESE TRADE IN RUBBER GOODS.

According to a report issued by Vice-Consul Carl C. Hansen at Bangkok, the exports of crude rubber from Siam to foreign countries for the fiscal year ended March 31, 1918, amounted to 24,000 pounds, against 23,123 pounds in 1916. These figures also include rubber substitutes.

The customs reports for the past five years show an increasing demand for rubber goods, the following figures representing the total imports through the port of Bangkok:

	Pounds.	Values.
1914.....	158,782	\$119,509
1915.....	143,206	103,702
1916.....	157,601	125,507
1917.....	189,061	165,081
1918.....	194,226	166,800

This covers automobile, cycle, and all other tires and also rubber manufactures.

The origin and declared value of rubber goods, landed at Bangkok during five fiscal years ended March 31, 1918, are given below:

Articles and Countries of Origin.	1913-14.	1914-15.	1915-16.	1916-17.	1917-18.
Motor car tires.....	129,928	103,531	140,480	157,203	163,136
United States	1,500	91	2,358	24,603	33,513
France	126	250	.....	.....	2,000
Germany	11,312	6,480	.....	.....	.....
Italy	1,271	1,271	.....	.....	3,252
Singapore	21,675	74,233	107,884	111,198	129,871
United Kingdom	98,827	21,229	30,328	20,803	7,083
Cycle tires	34,934	25,919	39,327	56,822	32,645
United States .....	.....	.....	7	702	98
Belgium .....	.....	234	.....	.....	.....
France .....	.....	142	.....	.....	.....
Germany	7,577	1,790	.....	.....	.....
Italy .....	.....	.....	1,069	.....	.....
Singapore	11,024	13,464	24,353	26,323	20,944
United Kingdom	16,131	9,796	13,898	27,640	8,354
All other tires	51,320	49,473	45,393	68,697	65,665
United States .....	.....	.....	362	1,144	1,325
France .....	.....	48	.....	.....	.....
Germany	299	.....	.....	.....	1,736
Japan	75	283	47	1,000	37,837
Singapore	1,074	4,203	10,409	10,605	37,837
United Kingdom	48,074	44,807	34,515	55,858	24,767
All other rubber goods	106,812	101,350	110,413	163,342	189,364
United States	504	730	2,707	3,287	11,951
China .....	.....	363	97	400	610
France	220	2,760	11	156	65
Germany	14,408	10,589	1,326	.....	.....
Hongkong	1,853	1,630	7,811	.....	.....
Japan	1,191	1,682	6,984	22,766	3,355
Singapore	46,249	54,927	75,100	80,725	119,666
United Kingdom	40,965	28,053	30,150	49,442	32,031
Totals	644,276	559,655	688,086	891,771	900,609

*One tal = 37 cents, United States currency.

A NEW SUBSTANCE RESEMBLING RUBBER.

"The 'Bulletin de l'Office Colonial,' volume XI, Nos. 127-128, Melun, France, 1918, contains an article by F. Heim, giving the results of an investigation made by the director of the 'Service d'Etude des Productions Coloniales' to determine the commercial value of a rubber-like substance from North Kamerun, Africa, samples of which were submitted. These samples were in the form of small bars and in large pieces and blocks in loaf form.

The product is rose-colored with a slightly darker surface which can possibly be attributed to oxidation. The dark red or black particles easily separate from the substance when heated and are of the quality of rubber. The substance seems to have properties between caoutchouc and gutta percha. The

viscosity is from 1 to 1.01 and at 40 degrees C. it becomes soft.

In the raw state it is well adapted for the manufacture of molded articles and use in surgery, dentistry, etc. The strength is less than that of caoutchouc, while the elasticity can be retained by a weak vulcanization. The substance can be hardened by vulcanizing and rendered inviolable for surgical and chemical uses. It is especially valuable as an insulating material for electric cables.

INCREASE OF RUBBER EXPORTS FROM THE STRAITS SETTLEMENTS.

The statistics given in our issue of April 1, 1919, concerning the gross quantities and values of the imports and exports of rubber for the Straits Settlements during 1917, were compiled before the Government figures were obtainable relative to the imports and exports by articles and countries of origin and destination.

The official figures recently published, according to the United States Consul General at Singapore, show that the total value of rubber exports for 1917 was much larger than that of 1916. United States exports of Pará rubber alone amounted in value to \$84,000,000, as compared with \$47,291,000 in 1916. Imports of manufactured rubber from the United States show a decrease of \$26,000 for 1917, compared with 1916 figures.

In the following table is given the value of the imports and exports of crude and manufactured india rubber and gutta percha for 1916 and 1917:

EXPORTS.		1916.	1917.
UNMANUFACTURED—		Value.	Value.
India and Borneo rubber:			
To United Kingdom	\$421,000	\$133,000	
Japan	112,000	68,000	
United States	27,000	25,000	
Totals	\$560,000	\$226,000	
Pará rubber:			
To United Kingdom	\$15,564,000	\$18,201,000	
Australia	203,000	266,000	
Canada	885,000	6,554,000	
France	635,000	1,034,000	
Italy	167,000	1,236,000	
Japan	2,812,000	3,610,000	
Russia	6,716,000	3,173,000	
United States	47,291,000	84,000,000	
Totals	\$74,273,000	\$118,074,000	
Gutta percha:			
To United Kingdom	\$558,000	\$865,000	
France	8,000	23,000	
Italy	1,000	20,000	
Japan	11,000	30,000	
Russia	20,000	20,000	
United States	261,000	600,000	
Totals	\$839,000	\$1,558,000	

IMPORTS.		1916.	1917.
MANUFACTURED—		Value.	Value.
Tires:			
From United Kingdom	\$419,000	\$223,000	
Australia	46,000	46,000	
France	54,000	203,000	
Italy	304,000	252,000	
Japan	258,000	138,000	
United States	91,000	66,000	
Totals	\$1,026,000	\$928,000	
Druggists' and dentists' sundries:			
From United Kingdom	\$34,000	\$19,000	
United States	14,000	10,000	
Totals	\$38,000	\$29,000	
Other rubber goods:			
From United Kingdom	\$60,000	\$71,000	
France	4,000	4,000	
Japan	34,000	44,000	
United States	5,000	4,000	
Totals	\$103,000	\$119,000	

¹A peso equals \$0.965 United States currency.

MEXICO TO HAVE NEW RUBBER FACTORY.

The Fomento de Comercio Internacional, S. A. (International Commerce Exchange), is the name of the new rubber company which is building a factory in Mexico City, Mexico, for the manufacture of automobile tires and inner tubes. While not yet completed, work on production has already been begun, about 100 hands being employed. About 25 tires and tubes daily are now being turned out, according to the president of the concern.

The factory is of modern brick and cement construction, with its own electric lighting plant, and oil is used for fuel. It is equipped with American machinery and American foremen are in charge.

Equipment for the manufacture of raincoats, hot-water bags, and rubber soles and heels has also been installed, and the company hopes later to manufacture all kinds of rubber goods, employing 350 hands when running at full capacity.

There is one other small rubber factory in Mexico City, equipped for the manufacture of rubber tires, but it is producing none at present.

RUBBER EQUIPMENT FOR MEXICAN RAILWAYS.

Among the items of rubber materials required by railway lines south of Mexico City are the following: 15,300 pieces air-brake hose, and 3,150 pieces air hose.

Quotations should be addressed to either Mr. Silviano Pruneda, Purchasing Agent, Estación Buenavista, Ferrocarril Mexicano, Mexico, D. F., or to Mr. F. P. de Hoyos, General Agent, Mexican Government Railway Administration, Woolworth Building, New York City.

GUAYULE FROM THE TORREON DISTRICT OF MEXICO.

Guayule rubber has been manufactured and exported of late from the consular district of Torreon, Mexico, at the rate of about 500,000 pounds a month, the exports to the United States for the month of March amounting to 442,596 pounds valued at \$112,751. This district includes the southwestern quarter of Coahuila, the northwestern corner of Zacatecas and the entire state of Durango except the railroad terminals in the northwest and guayule rubber is one of the leading sources of wealth of the district.

RUBBER TEXTILE IMPORTS INTO ARGENTINA.

Statistics for the year 1917 and the first quarters of 1918 show that Argentina imported during those respective periods rubberized textiles as follows:

Articles.	First Quarter, 1918.	1917.
Elastic garters, silk or mixture	4,983	16,635
Elastic garters, thread	4,418	21,251
Silk elastic for boots	1,791	1,073
Thread elastic for boots	6,054	41,176
Rubberized silk or crepe	5,376	36,300
Waterproof cloth	31,912	117,758
Elastic fabric other kinds	27,271	126,525
Waterproof coats	2,847	14,484
Soles for canvas shoes	45,149	139,849
Totals	129,861	519,645

¹A peso equals \$0.965 United States currency.

PANAMA SIGNS THE COMMERCIAL TRAVELERS' TREATY.

The Panama Government has ratified the commercial travelers' treaty with the United States, the purposes of which are to facilitate the operations of commercial travelers and to foster trade. Panama is one of the fourteen countries which have agreed to such a treaty, Uruguay and Guatemala having already signed similar agreements. The United States Senate has ratified the Uruguay and Guatemala treaties.

Under these treaties commercial travelers may operate throughout the country for a single fee, and samples without commercial value will be admitted free of duty.

BOLIVIA APPROVES PLAN FOR RUBBER GOODS FACTORY.

The National Congress of Bolivia has approved the law proposed by the President, by which fifty per cent of a capital of 300,000 bolivianos (1 boliviano = \$0.389) is guaranteed for the establishment of a rubber goods factory in Santa Cruz, or Cochabamba. ("Bulletin of the Pan American Union.")

Rubber Planting Notes.

RUBBER PROFITABLE IN FEDERATED MALAY STATES.

THE RUBBER-GROWING INDUSTRY of the Federated Malay States experienced a year of great prosperity during 1917, in spite of the decline in price during the second half of the year.

The total acreage owned by rubber estates exceeding 100 acres in area amounted to 1,044,839, of which 612,268 acres are planted with rubber only, as against 543,729 in 1916, and of this area 408,574 acres are in bearing. The amount of rubber exported increased from 62,764 tons in 1916 to 79,831 tons in 1917, valued at \$83,803,546 and \$107,317,739, respectively.

An experimental shipment of rubber seed was sent to England. The oil extracted from this was sold at \$243 a ton.

The scale of wages has recently tended to become more nearly uniform. The rates in Perak are approximately 23 cents for men and 17 for women, but are sometimes as high as 26 and 20, respectively, while some women tappers draw 26 cents. The rate paid to efficient tappers at the end of the year was from 19 to 20 cents daily, but estates near the boundaries of Perak and Negri Sembilan paid from 23 to 26. However, the price of rice, the principal food, remained nearly stable.

RUBBER EXPORTED FROM DUTCH GUIANA.

The declared exports from Dutch Guiana during 1916 and 1917 show a decrease in the amount of rubber exported, as follows: 1916—18,578 pounds, value \$12,284; 1917—8,134 pounds, value \$6,345.

SINGAPORE RUBBER EXPORTS.

Statistics are now available for the month of February, 1919, showing the exports of rubber from Singapore, and the countries of destination, as follows:

	Gross Britain.	United States.	Continent of Europe.	Totals.
Jelutong	1	638	939	659
Latex (rolls)	1	94	347	352
Para rubber	5,774	10,065	2,352	33,181
Totals	6,776	21,345	2,352	34,769

TOGOLAND RUBBER.

In spite of depressing conditions, rubber production increased in the British sphere of occupation in Togoland during 1917, when the production amounted to 64,272 kilograms, valued at £10,273. In 1916, the production amounted to 22,592 kilograms less, and the value was £2,900 lower. But local prices were lower during 1917 than during the previous year. The whole quantity produced was exported to Great Britain.

RUBBER IMPORTS AND EXPORTS FOR ECUADOR.

During 1917, Ecuador imported manufactured rubber goods to the amount of 54,191 pounds, value \$34,713, as against 90,493

pounds during 1916, value \$27,416. During the same periods she exported 909,940 pounds of crude rubber, value \$354,542, as against 837,454 pounds, value \$327,937.

UTILIZATION OF WASTE PRODUCTS ON STRAITS SETTLEMENTS RUBBER ESTATES.

Rubber-seed oil has been found to be a satisfactory substitute for linseed oil, and rubber estates in the Straits Settlements are beginning to experiment with the utilization of rubber seeds in the production of this oil. As there is an almost unlimited supply of the seeds, it is thought this industry may develop into one of importance, in which case oil-extracting machinery will find a good market.

ANNUAL RUBBER REPORT FOR THE UGANDA PROTECTORATE.

The exports of rubber from the Uganda Protectorate for the year ended March 31, 1918, as reported by the Department of Agriculture in Uganda, were 144,727 pounds of plantation rubber, value \$48,490, and 9,362 pounds of forest rubber, value \$4,492. This is double the amount for 1917, the figures being: plantation rubber, 71,955 pounds, value \$27,495; forest rubber, 400 pounds, value \$175.

Tapping results obtained in the Botanic Gardens, Entebbe, and on government plantations are satisfactory, the Kivu and Mabira plantation proving the success of rubber growing on a large scale.

PRODUCTION OF DUTCH RUBBER COMPANIES.

The following table by Frank W. Mahin, United States Consul at Amsterdam, shows the comparative production of Dutch rubber companies for 1917-1918. One-half kilo equals 1.1 pounds.

Companies.	1917. Half Kilo.	1918. Half Kilo.
Fransch-Nederlandse Koloniale Cultuur-Maatschappij	534,600	390,109
Rubber Maatschappij "Insulin"	221,600	338,300
Cultuur-Maatschappij "Bijabang"	543,400	609,000
N. V. Cultuur My "Nieuw-Tsjak"	275,949	314,436
Rubber Maatschappij "Tjibantjet"	82,030	123,650
Cultuur-maatschappij Salatri Plantations (1917 four months)	5,175	30,926
Zuid-Praeger Rubbermaatschappij	230,951	322,247
Nederlandse Rubbermaatschappij	1,525,200	1,611,300
Lampoon-Sumatra Rubber Maatschappij	161,100	237,600
Sumatra-Gaucheone Maatschappij	938,795	1,046,386
Java Gaucheone Compagnie	190,000	208,500
Indische Rubber Compagnie	410,007	543,600
Taluk Maatschappij "Kisapoh"	28,238	74,923
Lampoon-Sumatra Rubber Maatschappij	161,100	237,600
Praeger Rubber Maatschappij	279,196	342,786
Batse Sumatra Rubber Maatschappij	40,003	47,200
Sumatra Rubber Cultuur Maatschappij	354,400	433,600
Totals	5,977,718	6,912,154

PERCENTAGES OF CROP HARVESTED, AND OF RAINFALL RECORDED MONTHLY IN 1913, 1915, 1916, AND 1917 BY 62 REPRESENTATIVE ESTATES IN MALAYA.

	Crop.					Rainfall.				
	Average for Five Years 1913-1917.					Average for Five Years 1913-1917.				
	1913.	1914.	1915.	1916.	1917.	1913.	1914.	1915.	1916.	1917.
January	7.97	7.94	8.81	8.62	8.56	8.34	6.47	6.79	3.65	7.97
February	7.29	7.87	7.44	6.67	7.84	7.56	4.10	6.79	2.47	7.84
March	7.61	6.87	6.48	5.57	7.28	6.86	4.10	6.79	11.44	13.08
April	6.62	7.30	6.33	5.47	7.36	6.86	12.44	11.01	13.19	9.80
May	7.76	7.45	7.51	7.88	8.11	7.28	1.18	8.09	8.36	7.69
June	8.16	8.46	8.63	8.68	8.51	8.62	5.34	8.36	7.13	6.03
July	6.02	8.89	9.00	8.88	8.14	8.46	3.48	8.36	10.60	11.82
August	6.50	8.71	9.05	8.00	8.00	8.09	7.28	8.09	6.46	6.84
September	8.93	6.71	6.65	8.33	9.13	6.4	10.63	9.92	10.50	6.96
October	9.27	9.99	9.10	9.08	8.50	6.1	13.16	13.49	8.53	8.59
November	10.03	9.94	10.10	14.41	9.13	9.42	9.88	9.77	6.44	8.50
December	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00

RUBBER IN THE BENI DISTRICT OF BOLIVIA.

From the British Vice-Consul, Riberalta.

TRADE DEPRESSION in the Beni district, which marked the opening quarter of 1918, continued with greater emphasis during the quarter ended 30th June.

Owing to late rains and the consequent water-logged condition of the estates, the extraction and transport of rubber to suitable points on the rivers for exportation were greatly retarded. This fact, however, did not materially influence the rubber market, as, owing to the lack of transport facilities at the Atlantic ports during the first quarter of the year, large stocks became accumulated, and for this reason chiefly trade depression was markedly felt.

DIFFICULTIES OF THE INDUSTRY.

The prices for fine rubber, both in the English and United States markets during the quarter ended 30th June were considered fairly satisfactory, even taking into consideration the high rates for transport and insurance. To the scarcity of

for the corresponding periods of 1917 and 1916 being given for comparison. From these statistics it will be seen that the crisis really only began to be realized in the month of June, when exports were restricted to approximately 60 tons.

VIA VILLA BELLA (BENI DISTRICT).

	1916.	1917.	1918.
January	17,415	194,387	278,886
February	10,137	146,754	159,864
March	246,927	347,825	181,237
April	11,591	200,500	44,530
May	202,993	209,613	277,685
June	133,505	96,284	17,290
Totals	1,036,548	1,195,563	999,452

VIA MANAO (RIVER NEGRO DISTRICT).

	1916.	1917.	1918.
January	151,549	348,080	164,068
February	132,037	89,763	197,612
March	85,625	146,926	78,773
April	84,235	126,728	70,532
May	31,872	84,325	81,040
June	65,433	96,542	34,019
Totals	553,751	747,973	624,034

VIA GUAYARA MERIN (MAMORE DISTRICT).

	1916.	1917.	1918.
January	10,865	1,136	1,617
February	10,967	18,088	1,617
March	2,919	1,906	11,165
April	5,067	2,069	7,968
May	1,130	12,956	2,968
June	17,475	73,484	21,886

The following is a summary of the preceding tables:

	1916.	1917.	1918.
Villa Bella	1,036,548	1,195,563	999,452
Manao	553,751	747,973	624,034
Guayara Merin	17,475	73,484	21,886
Totals	1,607,774	2,017,020	1,645,372

NEW WIRELESS COMMUNICATIONS.

The extension of radiographic communication with Brazil has been effected, an arrangement which offers great facilities to rubber merchants whose interests are bound up with the Amazon valley. At Trinidad, the capital of the province of the Beni, a wireless has been established on the Telefunken system, while at Cobjia, the frontier town of the Brazilian Acre territory, another is being built. In addition to these improvements, the Bolivian Government has made a further concession to the public by the reduction of wireless rates by 50 per cent, resulting in a notably increased business.

RUBBER IN SEYCHELLES.

Rubber exports from Seychelles during 1917 amounted to 8,631 pounds, valued at \$1,907.84; in 1916, to 6,025 pounds, and in 1915, to 625 pounds. New areas are being opened for planting and there are enough trees already set out to produce 224,000 pounds in a few years.

The rubber is remarkably free from disease and actually thrives on the lateritic soil of this country, which is quite worn out. Signs of two kinds of fungi have been reported which were identified as *Hirneola hispida*, a harmless species growing on any dead branches, and *Hexagonia discopoda*, having a peculiar inclination for the dead branches of trees that are alive.

DISCOVERY OF TALC IN SOUTH AFRICA.

Since the outbreak of the present war a new industry has been developed in the Barberton district of South Africa, due to the discovery there of talc or soapstone. Large quantities are used in garages for the inside of tires as well as for many other purposes. Only the scarcity of shipping freight is said to hinder a large export trade.

AMERICAN CHAMBER OF COMMERCE IN ARGENTINA.

The American Chamber of Commerce in Argentina has recently changed its name to The Chamber of Commerce of the United States of America in the Argentine Republic.

BUY WAR SAVINGS STAMPS—BUILD FOR AMERICAN PROSPERITY and your own success.



CUTTING RUBBER FROM LATEXES, BOLIVIA.

shipping at the Atlantic ports is attributed the most acute crisis which has ever been felt in the Bolivian rubber industry. For a time it was believed that Brazilian rubber was getting the preference of shipment, over Bolivian transit rubber, at the ports of Manaus and Pará, and while this would only seem to have been a natural procedure, no proof was ever forthcoming in support of the allegation which doubtless originated in subtle pro-German minds.

The two largest exporters of rubber from the Beni received instructions during the period under review to withhold all exportation, and the smaller firms, dealing through commercial houses in the Brazilian centres of Manaus and Pará, were compelled to adopt a similar action on account of the lack of buyers, whose business disappeared with the scarcity of shipping at these ports. A moderate estimate of the stocks of rubber and cauchó stored in Riberalta and Cachuela Esperanza ready for export on June 30 was 1,000 tons. The inevitable result of this accumulation of stocks was a big slump in the local prices. Hesitancy characterized the action of the limited circle of buyers, and only nominal rates were offered, fine rubber being quoted at 1s. per pound, and cauchó at 4d. per pound, thus affording a magnificent opportunity to the speculator with a little ready capital.

MOVEMENT OF BOLIVIAN RUBBER.

The following table shows the movement of Bolivian rubber from the three principal northern centres of export, by way of the Madeira-Mamore Railway, with outlet to the Amazon at Porto Velho, for the first six months of the year, the figures

Recent Patents Relating to Rubber.

THE UNITED STATES.

ISSUED APRIL 22, 1919.

- 1,301,667. Sash demountable rim for tires. R. S. Bryant, assignor to Mess. assignments to The Standard Parts Co.—both of Cleveland, O.
- 1,301,628. Rubber-soled fabric shoe. M. H. Clark, Hastings-upon-Hudson, N. Y., assignor to The Goodyear's Metallic Rubber Shoe Co., Naugatuck, Conn.
- 1,301,317. Fountain Pen. L. Plancher, New York City, assignor to M. F. Fennell, Brooklyn—both in New York.
- 1,301,343. Non-slip pneumatic tire. H. R. Waterman, San Francisco, Calif.
- 1,301,352. Demountable rim for tires. C. E. F. Ahlin, Cleveland, assignor to W. A. Neisacher, Warren, and Alfred Fritzsche, Cleveland—all in Ohio.
- 1,301,354. Rubber-lined shoe. C. M. C. Baird, Chicago, Ill.
- 1,301,467. Resilient tire. J. Lorenz, Milwaukee, Wis.
- 1,301,501. Cork for hot-water bottles, having inclining portion to determine whether water in bottle is too hot for safety. A. R. Robertson, Vancouver, B. C., Canada.
- 1,301,509. Hotwater bottle. C. F. Schuch, Newark, N. J., assignor to A. Albright, Jr., New York City.
- 1,301,686. Brake lining. J. E. Grosvenor, Lamo, assignor of 1/2 to L. F. Montgomery, Fort Recovery—both in Ohio.
- 1,301,695. Demountable rim for tires. A. B. Henson, Franklin, Ky.
- 1,301,711. Stopper for hot-water bottles, etc. H. P. Kraft, Ridgewood, N. Y.
- 1,301,762. Bottle with rubber packing-ring in groove of neck. T. E. Suffolk, Elizabeth, Pa.

ISSUED APRIL 29, 1919.

- 1,301,841. Coating joints of paper containers with rubber solution to make them waterproof. E. C. Hawkins, Noblesville, Ind.
- 1,301,865. Curved elastic labret for corsets, etc. S. T. Metz, Brooklyn, N. Y., assignor to Victory Corset & Girdle Co., a New York corporation.
- 1,301,938. Dust-cap for tire valves. C. A. Herle, Rochester, assignor to D. H. Wright, Webster—both in New York.
- 1,301,698. Reinforced pump tire. J. F. Reschman, East Chicago, Ind.
- 1,301,038. Sleeve-puncture-proof. J. Hayes, Cleveland, Ohio.
- 1,302,091. Pneumatic tire composed of two layers of two different gages of wire mesh with composition of rubber and canvas between. E. M. Reid, Postville, Idaho.
- 1,302,133. Anesthetic apparatus. A. C. Clark, Chicago, Ill.
- 1,302,156. Split demountable rim for tires. H. D. Hamilton, Kenosha, and J. Goodman, Racine—both in Wisconsin.
- 1,302,173. Resilient tire. W. J. Kent, Brooklyn, N. Y., assignor to Revere Rubber Co., Chelsea, Mass.
- 1,302,177. Resilient tire. K. Kolby, L. P. Larson, and C. P. Nielsen, all of Ephraim, assignors to Kolby Wheel Co., Salt Lake City—both in Utah.
- 1,302,369. Truss with elastic insert. A. J. O. Hoschek, Brooklyn, N. Y.
- 1,302,417. Fountain pen. C. H. North, Cleveland, O.
- 1,302,418. Pneumatic tire with separate tread member. W. H. Northall, assignor of 1/2 to S. C. James and 1/2 to H. Males—all of Evansville, Ind.
- 1,302,441. Dust-cap for tire valves. M. C. Schweinert, West Hoboken, and J. Volchewski—both in New Jersey, assignors to A. Schrader's Son, Inc., Brooklyn, N. Y.
- 1,302,447. Rim for pneumatic tires. W. J. Stark, Vancouver, and S. R. Ramsay, New Westminster, B. C.—both in Canada.
- 1,302,454. Garter. L. M. Theodore (legal name T. D. Anagnostopoulos), Eunice, La.
- 1,302,473. Stretchable laminated fabric composed of leather cemented to elastic webbing. M. Schener, New York City.

ISSUED MAY 6, 1919.

- 1,302,585. Combination pencil and fountain pen. A. L. Oppenheim, New York City.
- 1,302,763. Operating device for rotary disk erasers. F. H. Call, Portland, Ore.
- 1,302,792. Dust-cap for valves of pneumatic tires. W. P. Hammond, Passaic, N. J., assignor to A. Schrader's Son, Inc., Brooklyn, N. Y.
- 1,302,842. Fountain or stylographic pen. F. M. Peart, Liscard, Eng.
- 1,302,954. Combined closure and eraser for fountain pens. S. Newell, Wapello, Ia.
- 1,302,970. Puncture-proof lining for pneumatic tires. W. H. Pritchett, U. S. Marine Corps.
- 1,302,974. Resilient tire. U. S. Robinson, assignor of 1/2 to M. Forcés—both of Lagrange, Ga.
- 1,303,027. Rubber connecting member for joining ends of belts. G. E. Carr, Boston, Mass.
- 1,303,139. Detachable tire rim. A. C. Wright and W. D. Dukes, assignors to The Warland Dual Rim Co., Limited, Aston—all in Birmingham, Eng.
- 1,303,144. Life-preserver suit. A. G. Afandri, New York City, assignor to C. Kenyon Co., Brooklyn—both in New York.
- 1,303,154. Repair boot for insertion between inner tube and casing of pneumatic tires. R. C. Bingham, Spokane, Wash.

ISSUED MAY 13, 1919.

- 1,303,224. Tire cover having elastic auxiliary warp threads for drawing it into circular shape. W. Achtmeyer, assignor to The Russell Manufacturing Co.—both of Middletown, Conn.
- 1,303,357. Demountable rim for tires. J. H. Miskimen, Glendive, Mont.
- 1,303,389. Inflatable bathing garment. J. Rebel, Cleveland, O.
- 1,303,546. Nipple for nursing-bottle. A. C. Eggers, Brooklyn, N. Y., assignor to The Goodyear's India Rubber Glove Manufacturing Co., Naugatuck, Conn.
- 1,303,589. Improvement in demountable rim for tires. L. H. Perlman, New York City.
- 1,303,841. Non-slip cushion section-tire. C. E. Siegfried, Akron, assignor of 1/2 to W. Hoyt, Cleveland Heights—both in Ohio.

ISSUED MAY 20, 1919.

- 1,303,865. Armored pneumatic tire. W. de Rooy, New York City.
- 1,303,869. Rubber-heel lift with fastener embedded therein. G. S. Ellithorpe, assignor of 1/2 to N. D. Fraser—both of Chicago, Ill.
- 1,303,871. Rubber sole for turn shoes. G. Ferguson, Wollaston, Mass., assignor by mesne assignments to United Shoe Machinery Corp., Paterson, N. J.
- 1,303,903. Surgical bandage. B. W. Jansen, College Point, assignor to Traut Rubber Co., New York City—both in New York.
- 1,303,995. Pneumatic tire. W. J. Vincent, Cardiff, Wales.
- 1,303,998. Pneumatic tire. H. L. von Trost, Fort Madison, Ia.
- 1,304,011. Cushion wheel. A. L. Bennett, Kansas City, Mo.
- 1,304,038. Dental plate with suction device. A. J. Glaser, Comfort, Tex.
- 1,304,054. Uterine syringe. T. Imazumi, Seattle, Wash.
- 1,304,115. Hydrometer to carry in automobile tool kit. J. Steiner, Long Island City, N. Y.
- 1,304,116. Auxiliary tire valve. T. J. Stephens, Spokane, Wash.
- 1,304,147. Inner tube. F. E. Bessler, Akron, O.
- 1,304,177. Pneumatic tire. I. Greenberg, Baltimore, Md.
- 1,304,193. Combined rubber ring and cover-piece to form bottle-cap. W. G. Nichol, Winnipeg, Man., Canada.
- 1,304,292. Pen with magazine for soluble ink. A. L. Flegel, Racine, Wis.
- 1,304,308. Attachment for telephone, to do away with holding receiver. E. Gransaul, New York City.
- 1,304,424. Dust-cap for tire valves. J. T. Ward, Los Angeles, Calif.

ISSUED MAY 27, 1919.

- 1,304,576. Inflating coupling for tire-valve casing. H. P. Kraft, Ridgewood, N. Y.
- 1,304,593. Shoe protector in two parts with elastic webbing connection. J. J. Farmer, Chicago, Ill.
- 1,304,739. Self-igniting fountain pen. H. L. Carman, New York City.
- 1,304,794. Dual rim for motor-car wheels. R. L. Morgan, Worcester, Mass.
- 1,304,801. Resilient tire. C. P. O'Brien, Omaha, Neb.
- 1,304,813. Tire molded to accommodate non-skid chain. C. E. Schneider, Chicago, Ill.
- 1,304,817. Non-puncturable ring for pneumatic tires. F. J. Slifka, Chicago, Ill.
- 1,304,915. Pneumatic insole. B. A. Spinney, Des Moines, Ia.
- 1,305,196. Pneumatic tire. A. L. Cole, Auburndale, Mass.

THE UNITED KINGDOM.

ISSUED MAY 7, 1919.

- 123,913. Crutch having pneumatic pad in arm-rest. F. A. Pennington, 10 Haden Road, Heston Chapel, and T. R. Day, Bankfield, Dayville—both in Lancashire.
- 124,004. Rim for solid tires. Dunlop Rubber Co., C. Macbeth, and H. C. Young, 14 Regent street, Westminster.
- 124,085. Improvements in fountain pens. D. Anderson, 114 West street, South Side, Glasgow.

APPENDIX TO ABRIDGEMENT OF SPECIFICATIONS (1918).

ISSUED MAY 14, 1919.

- 12,684. Rubber or rubber and canvas stream-line covering for stay-wires of airplanes, etc. Not yet accepted. A. R. Pettit, Weyland, Wraybury, Buckinghamshire, and Martinside, Limited, Brooklands Aviation Grounds, Byfleet, Surrey.

ISSUED MAY 21, 1919.

- 124,239. Cutting-machine for fabrics, having rubber ribs on either side of cutters to clamp material during cutting and divert it from the cutting roller. P. M. Q. Cohen, Aquatic Mills, Derby street, Creighton, Manchester.
- 124,271. Resilient wheel having rims separated by rubber rollers. N. W. McLeod, 15 Kingsbury Place, St. Louis, Mo., U. S. A.

ISSUED MAY 21, 1919.

- 124,282. Portable marine life-saving device in form of trunk, having water-tight cloak for occupant. C. T. Drijenko, Russian Government Commission, India House, Kingsway, London.
- 124,342. Tire valve. A. E. White, 88 Chancery Lane, London. (Holt Auto Devices Co., 1123 Conway Buildings, Chicago, Ill., U. S. A.)

- 124,347. Speaking tube having cup-shaped rubber mouth-piece, secured by head straps, to prevent extraneous noises entering. W. Plumbridge, 10 Verdun avenue, Hamble, and C. H. Fernain, Spring House, Spring Road, Sholing—both in Hampshire.
- 124,373. Catamenial appliance having waterproof shield and elastic straps. E. Andrae, 99 Trinity Road, Reddinburgh.
- 124,395. Life-saving garment with inflatable air tube. Robinson & Cleaver, Donegal Place, Belfast, and J. J. Evans, 1 Park avenue, Church End, Finchley, London.
- 124,404. Waterproof garments having air-printed face outside instead of inside. H. Wetmore, Aquarock Mills, North street, Chesham, Manchester.

ISSUED MAY 28, 1919.

- 124,607. Flapping-wing airplane having wings connected to body by elastic webbing. H. W. Hetherington, 75 Rochambeau avenue, Providence, R. I., U. S. A.
- 124,628. Nipple for feeding bottles. F. R. Graham-Yoell, Dulham Towers, East Trinity Road, Leith.
- 124,673. Rubber pads for crutches. F. C. Lynde, 51 King street, Manchester.
- 124,679. Band clip for securing rubber sleeves to metal pipes, etc. F. G. Pickering, 4 Pettit street, Carlisle, Cumberland.

THE DOMINION OF CANADA.

ISSUED MAY 20, 1919.

- 190,388. Valve cap. A. E. Bronson, Cleveland, Ohio, U. S. A.
- 190,555. Wear plate and attaching means, combined with circular rubber heel. V. F. Maliszewski, Detroit, Mich., U. S. A.
- 192,577. Tire valve. S. C. Sladden, New York City, N. Y., U. S. A.
- 190,583. Rubber sole-protector for boots and shoes. A. Thill, Barmouth, Merioneth, Wales.
- 190,606. Sole for turn shoes, having rubber body portion and fibrous insole strip. The United Shoe Machinery Co. of Canada, Limited, Maisonneuve, Quebec, assignee of G. Ferguson, Wollaston, Mass., U. S. A.
- 190,616. Footwear with rubber outsole and upper of rubberized fabric. The Canadian Consolidated Rubber Co., Limited, Montreal, Quebec, assignee of M. H. Clark, Pelham, N. Y., U. S. A.
- 190,624. Air-valve for pneumatic tires. Firestone Tire & Rubber Co., assignee of L. Greenwald—both of Akron, O., U. S. A.

ISSUED JUNE 3, 1919.

- 190,704. Dental plate with rubber suction trough in each aperture. J. Lehnert, Pittsburgh, Pa., U. S. A.
- 190,823. Solid rubber tire. G. A. Mortier, Preston, Lancaster, Eng.
- 190,863. Stretchless machinery belting. The Lambert Multiplex Co., assignee of H. M. Lambert—both of Portland, Ore., U. S. A.

NEW ZEALAND.

ISSUED MAY 1, 1919.

- 39,972. Respirator. R. Donald, 30 Parliament Hill Mansions, Highgate Road, London, Eng.
- 41,151. Resilient wheel. W. J. Dyas, 80 Queen's Drive, Musselburgh, Dunedin, N. Z.

THE FRENCH REPUBLIC.

PATENTS ISSUED WITH DATES OF APPLICATION.

- 20,662/483,285. (April 30, 1917). First certificate of addition to patent taken out December 30, 1915, for pneumatic tire casings. P. Moet and J. B. Haegy.
- 20,664/455,434. (May 9, 1917). First certificate of addition to patent taken out March 23, 1915, for soles made of rubber, leather and steel combined. Société Française du Cuir Armé.
- 489,289. (March 15, 1918). Rubber paving for roadways and other uses. G. Anderson, The Leyland & Birmingham Rubber Co., Limited, and Rubber Roadways Co., Limited.
- 489,301. (March 16, 1918). Improved elastic tire for automobiles and other vehicles. R. Trautwein and H. Bokanoski.
- 489,306. (March 14, 1918). A device to be placed between the tread and the wheel chaps of automobile tires to prevent slipping. H. G. MacWilliam.
- 489,324. (March 18, 1918). Spring tire for automobile wheels. G. Huber.
- 489,331. (March 19, 1918). Life-saving belt. M. Halperin.
- 489,346. (March 19, 1918). Improvements in resilient wheels. W. A. Black.
- 489,409. (March 15, 1918). Improvements in rubber soles. M. H. Laudou.
- 489,550. (February 2, 1917). Insubmersible life-saving valise. B. N. C. Mollard.
- 489,551. (March 2, 1917). Parachute clothing for aviators. B. N. C. Mollard.
- 489,620. (April 5, 1918). Puncture-proof pneumatic tire. L. S. Odell.
- 489,657. (April 10, 1918). Improvements in pneumatic tire casings. A. S. Burdick and J. C. Hermann.
- 489,671. (April 9, 1918). Pneumatic wheel with large tire having weak tension on soft center. E. Perrot, 22 boulevard de la Trémoille, Dijon (Côte-d'Or).
- 489,690. (May 5, 1918). Improvements in pneumatic tire treads. T. Dyrén and R. Hestén.
- 489,733. Improvements in shoes for tires of motor vehicles. A. E. Powell.
- 489,844. (April 24, 1918). Improvements in rubber tires for vehicles. A. A. Crozier.
- 489,854. (April 19, 1918). Douche for washing the eyes with running water. J. J. Pouly and J. M. Daudry.

- 489,856. (April 20, 1918). Economical sole without leather, flexible and interpenetrable, adapted for rapid attaching or detaching. C. Auslager, Cluny, Salève-et-Loire.
- 489,861. (April 25, 1918). Improvements in wheel tires reinforced with steel. J. H. Hamlin and J. C. Burford.

TRADE MARKS.

THE UNITED STATES.

- N. O. 100,667. A monogram in white composed of two F's against a black background—dental vulcanizers, rubber, etc. Fawcett & Fawcett, Brooklyn, N. Y.
- 100,631. Representation of a phenix rising from flames within a double outlined circle, above the word PHOENIX—finished vulcanized boots and shoes, soles and heels. The Phoenix Rubber Co., Akron, O.
- 106,845. The word CHILDHOOD in script letters—infants' rubber pants, etc. Canson, Pitts, Scott & Co., Chicago, Ill.
- 169,591. Representation of a pennant bearing the word Federal—composition soles and heels. The Federal Rubber Co., Cudahy, Wis.
- 111,215. The word JIFFY—fountain pens. Jiffy Pen Co., Sioux City, Ia.
- 111,768. Representation of a punctured tire within which appears the word INVALUABLE superimposed upon the initials H. & C. and the words TIRE PATCH SUPREME—tire-repair outfits and patches. Huff & Cutler, Boston, Mass.
- 112,330. The word LIBERTY within a double-outlined circle—rubber heels and composition soles. The Anchor Grip Heel Co., Eliza, O.
- 113,050. The words CLINCHER CROSS—golf balls. North British Rubber Co., Limited, Edinburgh, Scotland.
- 114,040. The words VULCO-CORD—rubberized woven fabric belting. The Gates Rubber Co., Denver, Colo.
- 114,515. Representation of a stencil bearing the words and characters AMERICAN ZINC L. & S. CO., AZO, L—zinc oxides for pigments in rubber compounding, etc. American Zinc, Lead & Smelting Co., Boston, Mass., and St. Louis, Mo.
- 114,518. Same as No. 114,515.
- 114,519. Same as No. 114,515 and No. 114,518.
- 114,610. The words WARNER FOUNTAIN SHAVING BRUSH—"Everything but the Razor"—shaving brushes. Warner-Patterson Co., Chicago, Ill.
- 115,320. The words HOOD RUBBER COMPANY, Boston within an oval—rubber boots and shoes, overshoes, and canvas shoes with rubber soles. Hood Rubber Co., Watertown, Mass.
- 115,256. Representation of a stencil bearing the word CUCKOO between lines composed of dashes, beneath an Indian's head—stitched and impregnated canvas belting. The Rossendale-Reddaway Belting & Hose Co., Newark, N. J.
- 115,260. Representation of a stencil bearing the word SEMINOLE between lines composed of dashes, beneath an Indian's head—stitched and impregnated canvas belting. The Rossendale-Reddaway Belting & Hose Co., Newark, N. J.
- 115,292. The words GOLD SEAL, MILLARD's on a conventional design—chewing gum, etc. Millard Gum Vending Corp., New York City.
- 115,395. The word TIMESCO—rubber tires and tubes. Times Square Auto Supply Co., Inc., New York City.
- 115,487. The words FINE-NEXE—rubber filler and wood-preserving oil. Spiritine Chemical Co., Wilmington, N. C.
- 115,678. The word NUSOLE over representation of two soles, one with a hole in it—waterproofing compound for shoe-soles. The Nusole Co., Colorado Springs, Colo.
- 115,943. The word IMPRE—rubber dolls, balls, etc. Zadek Feldstein Co., Inc., New York City.
- 116,778. The word KANTSLIP above representation of an inch-worm—self-vulcanizing patches for pneumatic tires. Kant Slip Co., Manzanola, Colo.
- 116,809. The word YARWAY combined with lines forming a triangle between the two syllables—valves of various kinds, spray nozzles, etc. Yarnall-Waring Co., Philadelphia, Pa.
- 116,381. The word BROWNE—rubber-impregnated belting. The Manjalah Rubber Manufacturers Co., New York City.
- 116,458. The word GLIDE—rubber belting. The Goodyear Tire & Rubber Co., Akron, O.
- 116,462. The word GOODYEAR—asbestos packing. The Goodyear Tire & Rubber Co., Akron, O.
- 116,867. The word YARWAY—valves of different kinds, clamps, spray nozzles, etc. Yarnall-Waring Co., Philadelphia, Pa.
- 117,016. The word KWIKFIX—rubber cement. Alick Merriman, Freehold, N. J.

THE FRENCH REPUBLIC.
TO AMERICANS.

- 25,911. The word TYCOS—all kinds of recording meters, gauges, etc. Taylor Instrument Cos., 95 Main street, Rochester, N. Y., U. S. A.
- 25,994. The word CAMACHINE—machines for slitting, winding, cutting, and perforating flexible materials; also parts and accessories. Camion Machine Co., 61 Poplar street, Brooklyn, N. Y., U. S. A.
- 26,031. The words RALE BAND—boots and shoes of rubber or rubber and fabric. Mishawaka Woolen Manufacturing Co., Hill and Water streets, Mishawaka, Ind., U. S. A.
- 26,032. Representation of a ball—boots and shoes of rubber or rubber and fabric. Mishawaka Woolen Manufacturing Co., Hill and Water streets, Mishawaka, Ind., U. S. A.
- 26,033. The word VAC—boots and shoes of rubber or rubber and fabric. Mishawaka Woolen Manufacturing Co., Hill and Water streets, Mishawaka, Ind., U. S. A.
- 26,222. The words ROVAL CORD—rubber tires for vehicles and similar articles. United States Tire Co., 1790 Broadway, New York City, U. S. A.
- 26,280. The words VULCO-CORD—belting. The Gates Rubber Co., 999 South Broadway, Denver, Colo., U. S. A.

AUSTRALIA.

TO AMERICANS.

- 3,453. Representation of a tire tread which is thinnest at an arm and hand wearing a rubber glove and holding a spatula, with the word *MILK* in the center of the tread. No. 10,000,000, manufactured from rubber and gutta percha. The Miller Rubber Co., 1269 South High street, Akron, Ohio, U. S. A. C. A. Hack, Collins street, Melbourne, Australia.)
- 3,456. Representation of a shield formed by bows and arrows, bearing the word *MOHAWK*—rubber tires. The Mohawk Rubber Co., Akron, Ohio, U. S. A. (F. M. Newton, Fink's Buildings, Elizabeth street, Melbourne, Australia.)

DESIGNS.

THE UNITED STATES.

- O. 53,225. Tire. Patented April 22, 1919. Term 14 years. E. Hopkins, New York.
- 53,278. Tire. Patented May 6, 1919. Term 7 years. J. Stungo, Pittsburgh, assignor to Stungo-Radium Rubber Co. (now Washington Rubber Co., Washington—both in Pa.)
- 53,279. Tire. Patented May 6, 1919. Term 14 years. M. L. Wiener, assignor to the Firestone Tire & Rubber Co.—both of Akron, O.
- 53,280. Tire. Patented May 13, 1919. Term 14 years. E. H. Cooper, Kansas City, Mo.



- 53,316. Tire. Patented May 13, 1919. Term 14 years. W. O'Neil, assignor to The General Tire & Rubber Co.—both of Akron, O.
- 53,331. Tire. Patented May 20, 1919. Term 14 years. J. G. Gates, assignor to The Gates Rubber Co.—both of Denver, Colo.
- 53,348. Windshield cleaner. Patented May 20, 1919. Term 14 years. J. F. White, assignor by mesne assignment to White Products Co.—both of Chicago, Ill.
- 53,350. Rubber heel. Patented May 27, 1919. Term 14 years. W. H. Clarke, Akron, O.
- 53,372. Non-skid tire. Patented May 27, 1919. Term 14 years. C. B. Kloppentz, assignor to Iowa Cord Tire Co.—both of Des Moines, Ia.

RECENT PATENTS IN URUGUAY.

According to a consular report, under date of March 21, 1919, the Ministry of Industries, Uruguay, granted patents on the following: improvements in suspensors; a substance known as "Tamponina" for the prevention and repair of punctures in tires; and a tire for vehicles.

JAPANESE TO PROTECT TRADE-MARKS.

It is reported that an association has been established at Osaka, Japan, for the purpose of protecting Japanese trade-marks against infringement, particularly in China where the subject matter of trade-marks is not regulated. Japanese business houses have suffered much by reason of the infringement of their trade-marks in China.

TRADE-MARKS IN URUGUAY.

A consular report from Asuncion, Uruguay, advises manufacturers who have not registered their trade-marks in that country to omit them on goods sent there, as it sometimes happens that individuals in Uruguay register such marks to prevent competitors from handling the line or for the purpose of exacting a premium for the right to sell goods bearing such marks.

PROTECTION OF TRADE-MARKS IN CHINA AND JAPAN.

A consular report calls attention to the importance of adequate protection of trade-marks in China. This may be accomplished by registering them with the customs officials in Shanghai and Tientsin, after which the superintendents of customs issue proclamations for their protection. Trade-marks should also be registered in Japan to secure adequate protection there.

HONDURAS HAS NEW TRADE-MARK LAW.

A new trade-mark law enacted in Honduras, effective August 1, 1919, provides for a registration fee of \$50 gold for each trade-mark registered. This fee will not be required, however, on applications filed prior to that date.

METHOD OF DETERMINING TON-MILEAGE OF TRUCKS.

A SIMPLE AND ACCURATE METHOD for figuring the ton-mileage of motor trucks is described by The B. F. Goodrich Rubber Co. Before arriving at the cost of truck operation it is essential to have the ton-mile figure for comparison with the average daily cost of operation. Such a system will allow the owner to compare the operating cost of one make of truck with another, and as well, truck haulage with horse and wagon delivery.

There are two classes of units used for measuring truck haulage. One is the absolute ton-mile, while the other is the commercial ton-mile. They should not be confused.

The absolute ton-mile is similar to that used in figuring railroad freight mileage. Because of the various systems of delivery, contingent on slopes and loads to be dropped en route, what is called the commercial ton-mile is adopted as a standard of measurement. The absolute or railroad ton-mile is one ton carried one mile; thus, one ton carried five miles equals five ton-miles, and five tons carried one mile also equals five ton-miles. Similarly, five tons carried three miles makes fifteen ton-miles.

Absolute ton-miles should be figured in connection with motor truck haulage only when uniform hauls are made, that is, when one truck carries the same load over the same distance. By multiplying the number of miles covered by the number of tons carried the owner can easily determine the cost per ton-mile by the additional operation of dividing the average daily ton-mileage into the average daily cost of operation. The result will be the cost per ton-mile. These figures are indispensable in keeping an accurate account of delivery expense and profit.

The commercial ton-mile is figured for trucks employed in continually making deliveries of portions of their loads. The big majority of trucks are operated under this condition. It can readily be seen that absolute ton-mileage would necessitate separate figuring for each stop and would be decidedly impracticable. Hence, the commercial ton-mile used.

The information from which to figure the commercial ton-mile comes from the driver's card. All that is needed is the number of deliveries made, the weight of each load and the total mileage for the day. First, determine the average tons per trip. This is found by reducing the total number of pounds hauled to terms of tons, i. e., 12,000 pounds would be termed as 6 tons. The average tons per trip, or the average load, is found by dividing the number of tons hauled by the number of deliveries made, i. e., 6 (tons) divided by 5 (deliveries) equals one and one-fifth tons, or the average load. This result multiplied by the total mileage for the day gives the ton-miles. For example, if the mileage covered by the truck is 60, the ton-miles for the day amount to 72, or 60 times one and one-fifth. When the truck makes but one trip a day, multiply the mileage by the number of miles carried, thereby using the absolute ton-mile basis.

Ton-miles are nothing more than the units for measuring truck performance. The principle of ton-mileage may be applied to any class of motor-truck haulage whether the units are baskets, bundles, kegs, cases, or thousands of feet of lumber. For the concern which does not do its hauling in tons the same measure of haulage may be had by substituting for the ton the unit best served to measure the delivery system. Thus, instead of the ton-mile we have the package-mile, multiplying the number of packages delivered by the number of miles covered in delivering them, or the keg-mile, or the case mile.

INTERCONTINENTAL CLOSES TORREON FACTORY.

The directors of the Intercontinental Rubber Co. have decided to close the factory at Torreon, Mexico, for an indefinite period, owing to the low price of crude rubber and present conditions in Mexico.

Review of the Crude Rubber Market.

NEW YORK.

DURING JUNE the tone of the crude rubber market has been dull and inactive. About the middle of the month the downward trend of prices resulted in large purchases by short interests. This was followed by a sharp reaction in the price of plantation first latex crepe, with the price falling promptly to the new low level of 40 cents. This is attributable to ample supplies in the hands of manufacturers and the reported excessive stocks in the Far East, London and New York. The month closed with nominal quotations.

PLANTATIONS. June 7, first latex crepe, spot 43 and 44 cents; June arrivals, 43 cents; July to December arrivals, 45 and 46 cents; 1920 arrivals, January to June, 47 and 46 cents; January to December, 47 and 48 cents. June 21, spot, first latex crepe was quoted at 40 and 41 cents; July to December arrivals, 43 and 42 cents; January to June, 1920, arrivals, 44 cents; January to December, 1920, arrivals, 46 cents.

June 7, spot ribs, 42 and 43 cents; July to September arrivals, 43½ and 43 cents; July to December arrivals, 44 and 45 cents; January to June, 1920, arrivals, 46 and 45 cents; January to December, 1920, 46 and 47 cents; June 21, this grade was: spot, 39 and 40 cents; July to September arrivals, 42 and 41 cents; January to June, 1920, arrivals, 43 cents; January to December, 1920, arrivals, 45 cents.

June 7, No. 1 amber crepe, spot, 39 cents; June 21, spot was 37 cents; June 7, No. 1 roll brown crepe, spot 30 and 29½ cents. June 21 this grade, spot, was quoted 28 and 30 cents.

The spot market was weak on plantation grades. Futures lower but not as weak as spot.

PARAS. On June 7 spot prices were: upriver fine, 56 and 56½ cents; islands fine, 46 and 47 cents; upriver coarse, 33½ and 34 cents; islands coarse, 21½ and 22 cents; Cameté coarse, 21½ and 23 cents; June 23, the spot quotations on these grades were: Upriver fine, 56 cents; islands fine, 47 cents; upriver coarse, 33½ cents; islands coarse, 21 cents; Cameté coarse, 22½ cents.

There was plenty of spot stock held at the above figures. The market at Pará held at higher figures, 66 cents being quoted for upriver fine.

	July 1, 1918.	June 1, 1919.	June 25, 1919.
Upriver weak fine.....	46 @	44 @	46 @
Upriver standard ball.....	46 @	34½ @ 35	34 @
Islands fine.....	46 @	45 @	45 @
Islands medium.....	34 @	43 @	43 @
Islands, coarse.....	22 @	21 @	21 @
Cameté, coarse.....	22 @	22½ @	22½ @
Lower Cameté ball.....	36 @	31 @	30 @
Peruvian fine.....	46 @	53½ @	54 @
Lapagos fine.....	46 @	53½ @	54 @

AFRICANS—

Niger delta, prime.....	38 @	23 @	24 @
Benzuela, M.B. No. 1.....	31 @	32 @	32 @
Benzuela No. 2.....	30 @	30 @	30 @
Congo prime, black upper.....	50 @	42 @	38 @ 39
Congo prime, red upper.....	48 @	40 @	34 @
Rio Nunez ball.....	55 @	50 @	50 @
Rio Nunez sheets and strings.....	55 @	50 @	50 @
Cameté pieces.....	55 @	50 @	50 @
Massai sheets and strings.....	55 @	50 @	50 @

CENTRALS—

Coirito scrap.....	39 @	32 @	35 @ 37
Fernanda sausage.....	39 @	32 @	35 @ 37
Central scrap.....	39 @	31 @	35 @
Central scrap and string.....	39 @	29 @	32 @
Central web sheet, 25%.....	35 @	28 @	28 @
Guayule, 40% standard.....	35 @	28 @	28 @
Guayule, dry.....	48 @	40 @	36 @

MANICOBAS—

Ceara negro heads.....	40 @	36 @	33 @
Ceara scrap.....	34 @	32 @	30 @
Manicoba (basis 30% loss).....	38 @	34 @	34 @
washing and drying.....	42 @	38 @	38 @

EAST INDIAN—

Assam crepe.....	56 @ 57	@	56 @
Assam onions.....	39 @	39 @	38 @
Penang black scrap.....	39 @	39 @	38 @

BALATA—

Block, Ciudad Bolivar.....	71 @	80 @ 85	75 @
Colombia.....	61 @	60 @ 62	60 @
Penang.....	50 @	40 @ 45	50 @ 60
Surinam sheet.....	95 @	1.00 @	1.05 @
Surinam amber.....	97 @	1.03 @	1.05 @ 1.10

PONTIANAK—

Banjerassin.....	15 @	14 @ 15	14 @
Palembang.....	16 @	15 @	15 @
Pressel block.....	15 @	16 @ 17	25 @
Sarak.....	15 @	12 @ 14	12 @

GUTTA PERCHA—

Gutta Suak.....	35 @	24 @	25 @
Red Macassar.....	60 @	3.15 @	3.15 @

* Rubber Association of America nomenclature.

** Nominal.

NEW YORK QUOTATIONS.

Following are the New York spot quotations, for one year ago, one month ago and on June 25, the current date:

PLANTATION HEVEA—	July 1, 1918.	June 1, 1919.	June 25, 1919.
First latex crepe.....	46 @	46 @ 47	46 @
Hevea first crepe.....	46 @	46 @	46 @
Amber crepe No. 1.....	44 @	44 @	44 @
Amber crepe No. 2.....	43 @	43 @	43 @
Amber crepe No. 3.....	42 @	42 @	42 @
Amber crepe No. 4.....	41 @	41 @	41 @
Brown crepe, thick clean.....	40 @	41 @	41 @
Brown crepe, thin clean.....	39 @	40 @	40 @
Brown crepe, thin speckly.....	38 @	39 @	39 @
Brown crepe, rolled.....	37 @	38 @	38 @
Standard quality.....	37 @	37 @	37 @
Hevea ribbed smoked sheets.....	37 @	37 @	37 @
Smoked sheets, plain standard quality.....	37 @	37 @	37 @
Hevea plain or smooth smoked sheets.....	37 @	37 @	37 @
Unsmoked sheet, standard quality.....	37 @	37 @	37 @
Hevea unsmoked sheets.....	37 @	37 @	37 @
Colombo scrap No. 1.....	37 @	37 @	37 @
Colombo scrap No. 2.....	37 @	37 @	37 @

BRAZILIAN PARAS—

Upriver fine.....	56 @	56½ @	55½ @ 56
Upriver medium.....	52 @	51 @	51 @
Upriver coarse.....	46 @	34 @	34 @

RECLAIMED RUBBER.

The market for reclaimed rubber continues very quiet. This condition will continue until the three controlling factors are modified. One of these factors is the extremely light demand for reclaim by the mechanical goods division of the rubber industry. This condition it is hoped will shortly disappear following with the advent of peace.

The other factors of market influence are the high prices at which dealers are holding scrap rubber which are well nigh prohibitive, and the low price of crude rubber.

NEW YORK QUOTATIONS.

JUNE 25, 1919.

Subject to change without notice.

Standard reclaims:			
Friction.....	35 @	35 @	35 @
Mo. standard.....	30 @	30 @	30 @
Rel. 1.....	13 @	13 @	13 @
Rel. 2.....	14½ @	14½ @	14½ @
Rel. 3.....	16½ @	16½ @	16½ @
White.....	14 @	14 @	14 @

COMPARATIVE HIGH AND LOW SPOT RUBBER PRICES.

PLANTATIONS—	1919.	1918.	1917.
Paras	20.44	20.44	20.44
Paras	20.44	20.44	20.44
Paras	20.44	20.44	20.44
Paras	20.44	20.44	20.44
Paras	20.44	20.44	20.44
Paras	20.44	20.44	20.44
Paras	20.44	20.44	20.44
Paras	20.44	20.44	20.44
Paras	20.44	20.44	20.44
Paras	20.44	20.44	20.44

THE MARKET FOR COMMERCIAL PAPER.

In regard to the financial situation, Albert B. Beers, broker in crude rubber and commercial paper, No. 68 William street, New York City, writes:

During July the demand for paper has been light and mostly from the rubber plantations, the latter having been reduced to 50 per cent to 54 per cent of their normal requirements.

WEEKLY RUBBER REPORT.

CITICORP & CO., LIMITED, Singapore, report (May 1, 1919): Following advices of declining values in London and New York, the weekly rubber auction opened yesterday with a slightly weaker tone, and, in the earlier stages of the sale, not more than 75 per cent was paid for fine ribbed smoked sheet. Later in the day, however, dealers came in rather heavily and prices strengthened considerably, the advancement being maintained to the close. Fine pale crepe sold up to 79 cents (79 per cent was paid for one lot), showing a decline of 1/2 cent on the week. The top price for ribbed smoked sheet is 1/2 cent up at 78 cents (78 per cent was paid for one small lot), but very few lots sold at a higher figure than 77 cents. Cream brown and dark crepes were in strong demand and received advances of 1/4 to 2 cents. Barky crepes received more attention than usual, and are 2 cents up on the week. Small quantities of plain smoked and unsmoked sheet sold at fairly good prices. The total quantity catalogued was 905 tons, of which 623 tons were sold.

The following is the course of values:

	In Singapore per Pound.	Sterling Equivalent per Pound in London.
Sheet, fine ribbed smoked	78	2/0
Sheet, good ribbed smoked	75 1/2	1/11 1/2
Sheet, plain smoked	58	1/6 1/2
Sheet, ribbed	53	1/5 1/2
Sheet, plain, unsmoked	53	1/5 1/2
Crepe, fine pale	77	2/0 1/2
Crepe, good pale	73	1/11 1/2
Crepe, fine brown	65 1/2	1/10 1/2
Crepe, good brown	58	1/7 1/2
Crepe, dark	45	1/7 1/2
Crepe, bark	45	1/7 1/2
Scrap, virgin and pressed	35	1/10 1/2
Scrap, house	29	1/11 1/2

¹Quoted in S. S. Currency.

EXPORTS OF INDIA RUBBER FROM MANAOS DURING THE MONTH OF APRIL, 1919.

EXPORTERS.	Fine.	Medium.	Coarse.	Caucho.	TOTALS.	Fine.	Medium.	Coarse.	Caucho.	TOTALS.	GRAND TOTALS.
Stowell & Co.,	47,016	40,033	22,411	114,506	223,966	102,000	23,680	20,130	327,810	551,776	
General Rubber Co. of Brazil,	46,409	43,743	66,318	93,530	250,000	121,000	3,360	10,640	135,000	385,000	
T. A. Mendes & Co.,	60,636	14,742	14,368	16,414	106,000	330,810	510	170	330,810	330,810	
Tancredi, Porto & Co.,	347	9,207	3,961	1	13,516	156,082	1,204	300	156,082	169,598	
T. G. Araujo, .....	.....	.....	.....	.....	.....	92,268	8,278	1,204	101,750	101,750	
Higon & Fall, .....	.....	.....	.....	.....	.....	44,788	3,494	3,073	51,657	51,657	
D. Levy & Co., .....	.....	.....	.....	.....	.....	23,690	3,368	11,463	47,215	47,215	
I. Fasabá, .....	.....	.....	.....	.....	.....	19,034	2,140	1,465	22,639	22,639	
Antonio Pereira,	8,181	1,247	199	.....	9,627	.....	.....	.....	.....	9,627	
Totals	162,589	108,972	137,097	224,451	633,109	1,026,362	27,270	52,037	211,294	1,316,963	1,950,972
In transit, Equitos,	5,900	16,593	4,405	3,090	29,988	11,597	12,970	5,296	33,936	63,799	93,787
Totals	168,489	125,565	141,502	227,541	663,097	1,037,959	40,240	57,333	245,230	1,380,762	2,044,859

(Compiled by Stowell & Co., Manaus, Brazil.)

STRAITS SETTLEMENTS RUBBER EXPORTS.

An official report from Singapore states that 10,848 tons of rubber (of which 1,772 tons were transshipments), were exported from the Straits Settlements in the month of April, as compared with 20,908 tons in March, and 6,584 tons in the corresponding month last year. The total export for four months of the present year was 61,821 tons, against 22,078 tons in 1918, and 24,459 tons in 1917. Appended are the comparative statistics:

	1917.	1918.	1919.
January	3,562	4,307	14,804
February	2,995	15,661	14,804
March	8,299	8,858	20,908
April	6,103	6,584	10,848
Totals	24,459	22,078	61,821

FEDERATED MALAY STATES RUBBER EXPORTS.

An official report from Kuala Lumpur states that 7,664 tons of rubber were exported from the Federated Malay States in the month of April, as compared with 6,019 tons in March, and 2,428 tons in the corresponding month last year. The total export for four months of the present year was 36,315 tons, compared with 29,545 tons in 1918, and 26,288 tons in 1917. Appended are the comparative statistics:

	1917.	1918.	1919.
January	5,995	7,588	7,163
February	6,290	6,820	10,809
March	7,088	7,709	10,679
April	5,955	7,428	7,664
Totals	26,288	29,545	36,315

RUBBER IMPORTS AND EXPORTS FOR CEYLON.

IMPORTS.		January 1 to April 11	
Crude rubber:		1918.	1919.
From Straits Settlements	.....pounds	1,336,403	662,893
India	.....	655,509	534,349
Java and other countries	.....	5,107	285,100
Totals	.....	1,997,019	1,482,342
EXPORTS.		January 1 to April 14.	
Crude rubber:		1918.	1919.
To United Kingdom	.....pounds	4,800,486	10,235,965
France	.....	1,336,403	662,893
Victoria	.....	80,735	22,742
New South Wales	.....	118,796	62,742
United States	.....	8,025,147	25,760,041
Canada and Newfoundland	.....	260,016	1,206,741
India	.....	659	1,677
Straits Settlements	.....	129,858	105,320
Japan	.....	13,475,697	37,658,370
Totals	.....	13,475,697	37,658,370

¹These figures include cargoes for transshipment to New Zealand, other ports of Australia, and dependencies.
(Compiled by the Ceylon Chamber of Commerce.)

PLANTATION RUBBER EXPORTS FROM JAVA.

	February, 1918.	1919.	Two Months Ended February 28.
T. Holland	120,000	120,000	120,000
United States	1,577,000	200,000	1,650,000
Canada	697,000	1,748,000	1,748,000
Singapore	118,000	393,000	319,000
Japan	211,000	39,000	230,000
Australia	.....	28,000	66,000
Other countries	.....	2,000	11,000
Totals	2,603,000	2,560,000	3,967,000
From Batavia	1,236,000	1,020,000	2,009,000
Sourabaya	.....	50,000	23,000
Sourabaya	1,367,000	830,000	1,908,000
Other ports	.....	120,000	226,000
Totals	2,603,000	2,560,000	3,967,000

CRUDE RUBBER ARRIVALS AT ATLANTIC AND PACIFIC PORTS AS STATED BY SHIPS' MANIFESTS.

PARAS AT NEW YORK.

	Cases.					Mixed.	Totals.
	Fine.	Medium.	Coarse.	Caucho.	Rubber.	Pounds.	Pounds.
June 4. By the S. S. Benedict, from Pará.							
1. Poel & Kelly,	53,907	1,583	8,590	120,770	25,093	209,943	
2. Alden's Successors, Ltd., .....	.....	.....	.....	19	216	235	
3. Alden's Successors,	20,260	74,092	71,263	.....	.....	165,613	
4. Meyer & Brown,	24,500	.....	38,100	313,600	61,274	356,200	
5. Gaston, Williams & Wignmore, .....	.....	7	192	151	.....	100,718	
6. Gaston, Williams & Wignmore, .....	.....	.....	.....	104	138	117,260	
7. H. A. Astlett & Co.,	129	42	17	.....	.....	74,131	
8. H. A. Astlett & Co.,	70	1	43	50	.....	36,940	
9. H. A. Astlett & Co., .....	.....	.....	.....	62	.....	24,288	
10. F. R. Henderson, .....	.....	.....	.....	62	.....	24,288	
11. Paul Bernick, .....	.....	.....	.....	.....	43,436	389,400	
12. G. Amann & Co., Inc., .....	.....	.....	.....	87	163	7,741	
13. Various,	50	.....	.....	.....	.....	151,396	

¹Pounds.

²Camels.

³Including medium.

4482 packages.

⁴Packages.

Cases.

	Fine.	Medium.	Coarse.	Cauch.	Mixed	Totals.
					Rubber.	Pounds.
June 11. By the S. S. <i>Cuthbert</i> , from Iquitos.						
H. A. Astlett & Co.	88	...	...	...	...	30,800
Paul & Kelly	...	...	...	...	...	14,000
June 11. By the S. S. <i>Cuthbert</i> , from Manáos.						
Meyer & Brown	...	15	...	...	...	15,700
Paul & Kelly	...	...	...	...	...	221,550
General Rubber Co.	648	11	145	30	...	862,490
G. Amisack & Co., Inc.	57	8	114	...	...	63,967
Gaston, Williams & Wigney	...	66	258	64	...	96,640
H. A. Astlett & Co.	...	...	...	...	...	23,185
Various	483	73	112	19	...	274,956

PLANTATIONS.

Shipment from:	Shipped to:	Pounds.	Totals.
May 3. By the S. S. <i>City of Norwich</i> , at Tacoma.	Colombo	40,340	
United States Rubber Co.	Colombo	141,600	
Charles T. Wilson Co., Inc.	Colombo	25,180	
Hood Rubber Co.	Colombo	673,560	
L. Littlejohn & Co., Inc.	Colombo	395,100	
Paul & Kelly	Colombo	481,600	
Meyer & Brown	Colombo	175,840	
Edward Maurer Co., Inc.	Colombo	36,000	
William Brandt's Sons.	Colombo	8,800	
Adolph Hirsch & Co.	Colombo	5,400	
Cave & French, Inc.	Colombo	23,360	
Slater, Farwood & Co.	Colombo	65,160	
Various	Colombo	19,440	2,111,440

May 9. By the S. S. <i>India Major</i> , at Tacoma.	Kobe	New York	40,500
Edward Maurer Co., Inc.	Kobe	New York	40,500
William H. Stiles & Co., Inc.	Kobe	New York	77,580

May 14. By the S. S. <i>Tancred</i> , at San Francisco.	Singapore	New York	365,400
F. R. Henderson & Co.	Singapore	San Fran.	108,360
Rubber Co.	Singapore	San Fran.	49,060
L. Littlejohn & Co., Inc.	Singapore	San Fran.	25,200
L. Littlejohn & Co., Inc.	Singapore	New York	238,520
Peninsular Trading Agency	Singapore	San Fran.	52,380
Fred Stern & Co.	Singapore	San Fran.	333,600
Meyer & Brown	Singapore	San Fran.	164,340
Charles T. Wilson Co., Inc.	Singapore	New York	100,500
Winter, Ross & Co.	Singapore	New York	1,258,800
The B. F. Goodrich Co.	Singapore	Akron	903,960
Firestone Tire & Rubber Co.	Singapore	Akron	1,143,180

May 17. By the S. S. <i>Kotori Maru</i> , at Seattle.	Penang	Seattle	56
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May 19. By the S. S. <i>Niaz</i> , at San Francisco.	Singapore	Akron	101,100
The Goodyear Tire & Rubber Co.	Batavia	Akron	294,660
Aldens' Successors, Limited	Soerabaya	New York	7,560
F. R. Henderson & Co.	Batavia	Seattle	106,020
Aldens' Successors, Limited	Batavia	Seattle	42,480
L. Littlejohn & Co., Inc.	Median	San Fran.	28,440
J. T. Johnstone & Co., Inc.	Delavan	San Fran.	25,020
Various	Batavia	San Fran.	156,240
Various	Samarang	San Fran.	66,240
Various	Soerabaya	San Fran.	468,520

May 20. By the S. S. <i>Tynderens</i> , at San Francisco.	Colombo	New York	30,780
Aldens' Successors, Limited	Penang	New York	270,000
The B. F. Goodrich Co.	Penang	Akron	110,700
Henderson Bros.	Penang	San Fran.	17,640
Winter, Ross & Co.	Singapore	San Fran.	77,580
William Brandt's Sons	Penang	San Fran.	103,500
Raw Products Co.	Penang	New York	32,040
Pacific Trading Corp. of America	Penang	New York	6,786
Various	Colombo	New York	28,440

May 20. By the S. S. <i>Tynderens</i> , at Seattle, via Hongkong.	Hongkong	Akron	1,011,600
The B. F. Goodrich Co.	Penang	Akron	6,714
Mitsui & Co., Limited.	Singapore	Seattle	862,740
Firestone Tire & Rubber Co.	Hongkong	Akron	171,540
Firestone Tire & Rubber Co.	Penang	Akron	12,270
William H. Stiles & Co., Inc.	Far East	New York	132,300
Various	Far East	New York	100,800
Aldens' Successors, Limited	Singapore	Seattle	69,840
Aldens' Successors, Limited	Pt. Swet'n'h'm	Seattle	59,940
Aldens' Successors, Limited	Singapore	Seattle	720
L. Littlejohn & Co., Inc.	Singapore	Seattle	1,041,320

General Rubber Co.	Far East	New York	59,380
Meyer & Brown	Far East	New York	235,800
The Goodyear Tire & Rubber Co.	Pt. Swet'n'h'm	Seattle	181,440
Paul & Kelly	Singapore	Seattle	110,600
Bush & Co.	Pt. Swet'n'h'm	Seattle	35,300
Frank P. H. & Co.	Far East	Akron	67,320
Fred Stern & Co.	Pt. Swet'n'h'm	Seattle	36,540
Owens & Hendry	Far East	New York	35,440
Edward Maurer Co., Inc.	Pt. Swet'n'h'm	Seattle	13,500

May 21. By the S. S. <i>Senator</i> , at Seattle, via Manila.	Singapore	Seattle	101,340
F. R. Henderson & Co.	Singapore	New York	84,600
General Rubber Co.	Singapore	Seattle	80,400
Meyer & Brown	Singapore	Seattle	28,440
L. Littlejohn & Co., Inc.	Singapore	Seattle	264,240

May 23. By the City of Manila, at New York.	Colombo	New York	111,142
Charles T. Wilson & Co., Inc.	Colombo	New York	89,820
Hood Rubber Co.	Colombo	New York	51,120
William H. Stiles & Co.	Colombo	New York	46,800
Meyer & Brown	Colombo	New York	360,000
L. Littlejohn & Co., Inc.	Colombo	New York	115,040
Robinson & Co.	Colombo	New York	14,400
Rogers-Pyatt Shellac Co.	Colombo	New York	66,780
Various	Colombo	New York	72,000

May 23. By the S. S. <i>Ision</i> , at New York.	London	New York	119,160
The B. F. Goodrich Co.	London	New York	304,740
Paul & Kelly	London	New York	11,880
T. D. Downing & Co.	London	New York	51,020
Various	London	New York	990,360

May 25. By the S. S. <i>Buya Maru</i> , at San Francisco.	Singapore	San Fran.	15,660
F. R. Henderson & Co.	Singapore	New York	79,200
R. Henderson & Co.	Singapore	New York	47,340
L. Littlejohn & Co., Inc.	Singapore	San Fran.	155,600
J. T. Johnstone & Co., Inc.	Singapore	New York	201,600
Paul & Kelly, Limited.	Singapore	New York	78,680
W. R. Grace & Co.	Singapore	San Fran.	60,660

United Malaysian Rubber Co. Ltd.	Singapore	San Fran.	112,000
J. T. Johnstone & Co., Inc.	Penang	New York	35,640
W. H. Stiles & Co., Inc.	Penang	New York	473,300
Rubber Importers & Dealers Co., Inc.	Singapore	New York	100,800

Charles T. Wilson Co.	Singapore	New York	252,720
Frank & Dow & Co.	Singapore	San Fran.	49,680
Robinson & Co.	Singapore	New York	17,880
Meyer & Brown	Singapore	New York	284,760
Rubber Trading Co.	Singapore	New York	54,000

Firestone Tire & Rubber Co.	Singapore	Akron	271,080
The Goodyear Tire & Rubber Co.	East Indies	Akron	392,400
Hood Rubber Co.	Str'ts Set'lmt	Watertown	435,240
Dunlop Tire & Rubber Goods Co., Limited.	Malacca	Toronto	12,960
Various	Far East	New York	126,540

May 29. By the S. S. <i>Crews Hall</i> , at New York.	Colombo	Watertown	113,940
Hood Rubber Co.	Colombo	New York	111,600
F. R. Henderson & Co.	Colombo	New York	109,800
Charles T. Wilson Co., Inc.	Colombo	New York	550,720
Meyer & Brown	Colombo	New York	447,300
L. Littlejohn & Co., Inc.	Colombo	New York	17,880
Paul & Kelly	Colombo	New York	129,960
Thomas T. Lipton	Colombo	New York	129,960

Gaston, Williams & Wigney	Colombo	New York	62,820
Peninsular Trading Co.	Colombo	New York	45,000
Slater, Farwood & Co.	Colombo	New York	40,130
Ch. Travunian & Co.	Colombo	New York	37,680
E. S. Kuh & Valk Co., Inc.	Colombo	New York	31,500
Edward Maurer Co., Inc.	Colombo	New York	11,880
Various	Colombo	New York	978,480

May 31. By the S. S. <i>Saronia</i> , at New York.	London	New York	312,300
The B. F. Goodrich Co.	London	New York	47,700
F. R. Henderson & Co.	London	New York	122,940
Smith & Schupser	London	New York	14,380
L. Littlejohn & Co., Inc.	London	New York	34,760
Paul & Kelly	London	New York	20,112

June 2. By the S. S. <i>Djemba</i> , at New York.	Soerabaya	New York	5,760
G. Gredman	Batavia	New York	27,540
L. Littlejohn & Co., Inc.	Soerabaya	New York	33,120
L. Littlejohn & Co., Inc.	Soerabaya	New York	43,560
Raw Products Co.	Soerabaya	New York	46,080
J. T. Johnstone & Co., Inc.	Soerabaya	New York	11,520
William H. Stiles & Co., Inc.	Soerabaya	New York	143,100
Firestone Tire & Rubber Co.	Batavia	New York	143,100

Reported in THE INDIA RUBBER WORLD, June 1, 1919.

*Cases shortshipped from S. C. to Manila.

*Cases shortshipped.

*At Seattle.

*To be shortshipped from S. S. Korea Maru.

Shipment from:	Shipped to:	Pounds.	Totals.	Shipment from:	Shipped to:	Pounds.	Totals.
Firestone Tire & Rubber Co.	Soerabaya	Akron	260,280	Peninsular Trading Co., Inc.	Singapore	New York	96,480
Manhattan Rubber Mfg. Co.	Soerabaya	New York	37,440	Jaeger & Co.	Singapore	New York	126,900
Rubber Trading Co., Inc.	Soerabaya	New York	93,600	Balfour, Williamson & Co.	Singapore	New York	83,880
Robinson & Co.	Batavia	New York	130,680	A. C. Fox & Co.	Singapore	New York	67,500
Edwards & Co.	Soerabaya	New York	18,360	Joosten & Jansen, Inc.	Singapore	New York	62,820
Edward Maurer Co., Inc.	Soerabaya	New York	133,660	Rubber Importers & Dealers Co., Inc.	Singapore	New York	57,340
Poel & Kelly, Inc.	Batavia	New York	38,840	Winter, Ross & Co.	Singapore	New York	56,160
Poel & Kelly, Inc.	Soerabaya	New York	74,700	T. H. Desmond & Co., Inc.	Singapore	New York	54,000
Winter, Ross & Co.	Batavia	New York	77,400	Pacific Trading Corp. of America	Penang	New York	50,400
Winter, Ross & Co.	Soerabaya	New York	84,780	Pacific Trading Corp. of America	Singapore	New York	43,560
E. S. Kuh & Co., Inc.	Batavia	New York	35,640	Vernon Metal & Produce Co., Inc.	Singapore	New York	45,360
Catz American Co., Inc.	Batavia	New York	38,340	W. R. Grace & Co.	Singapore	New York	40,320
Lays-Holland America Co.	Batavia	New York	18,360	A. G. De Cherubin & Co.	Singapore	New York	40,320
General Rubber Co., Inc.	Batavia	New York	706,320	Edward Bouteau & Co.	Singapore	New York	36,000
W. R. Grace & Co.	Batavia	New York	26,460	Robinson & Co.	Singapore	New York	35,640
Schlichting & Co., Inc.	Batavia	New York	109,080	The United Malaysian Rubber Co., Ltd.	Singapore	New York	33,300
Gaston, Williams & Wigmore	Batavia	New York	44,100	Meyer & Brown, Inc.	Singapore	New York	289,000
Peninsular Trading Co., Inc.	Soerabaya	New York	28,620	Various	Singapore	New York	166,240
Various	Batavia	New York	181,900	Various	Pt. Swet'h'm New York	New York	95,040
JUNE 2. By the S. S. <i>Cermania</i> , at New York.				JUNE 13. By the S. S. <i>City of Benares</i> , at New York.			
The B. F. Goodrich Co.	Liverpool	New York	68,940	Charles T. Wilson Co., Inc.	Colombo	New York	128,340
Poel & Kelly, Inc.	Liverpool	New York	8,820	William H. Stiles & Co., Inc.	Colombo	New York	25,200
JUNE 2. By the S. S. <i>Lorraine</i> , at New York.				L. Littlejohn & Co., Inc.	Colombo	New York	58,000
Hyman & Bauman Co., Inc.	Havre	New York	180	Hood Rubber Co., Inc.	Colombo	New York	2,700
JUNE 3. By the S. S. <i>Tenyo Maru</i> , at San Francisco, via Hongkong.				Meyer & Brown, Inc.	Colombo	New York	33,600
Aldens' Successors, Limited	San Fran.	New York	43,300	Poel & Kelly, Inc.	Colombo	New York	216,880
L. Littlejohn & Co., Inc.	San Fran.	New York	36,800	Gove & French, Inc.	Colombo	New York	57,420
Edwards & Co.	San Fran.	New York	89,640	Vernon Metal & Produce Co., Inc.	Colombo	New York	26,820
JUNE 3. By the S. S. <i>Abita Maru</i> , at New York.				Tharnett & Fabr.	Colombo	New York	25,200
Hood Rubber Co., Inc.	Colombo	New York	35,640	Frame & Co.	Colombo	New York	18,000
J. T. Johnstone & Co., Inc.	Colombo	New York	119,160	Various	Colombo	New York	6,780
Rubber Trading Co., Inc.	Colombo	New York	7,200	JUNE 14. By the S. S. <i>Adriatic</i> , at New York.			
Charles T. Wilson Co., Inc.	Colombo	New York	98,100	L. Littlejohn & Co., Inc.	London	New York	4,480
The Goodyear Tire & Rubber Co.	Colombo	New York	46,620	JUNE 18. By the S. S. <i>Bardie</i> , at New York.			
Gove & French, Inc.	Colombo	New York	69,660	L. Littlejohn & Co., Inc.	Liverpool	New York	4,620
L. Littlejohn & Co., Inc.	Colombo	New York	65,880	JUNE 18. By the S. S. <i>Manhattan</i> , at New York.			
Meyer & Brown, Inc.	Colombo	New York	146,160	F. R. Henderson & Co., Inc.	London	New York	720
Poel & Kelly, Inc.	Colombo	New York	233,620	J. T. Johnstone & Co., Inc.	London	New York	23,000
JUNE 4. By the S. S. <i>Invisible</i> , at New York.				Smith & Schipper, Inc.	London	New York	42,480
T. D. Downing & Co., Inc.	London	New York	24,840	Rogers-Pyatt Shellac Co., Inc.	London	New York	22,680
JUNE 6. By the S. S. <i>Port Nicholson</i> , at New York.				Various	London	New York	24,480
The B. F. Goodrich Co.	London	New York	312,300	JUNE 19. By the S. S. <i>Tsuyama Maru</i> , at New York, via Hongkong.			
Rubber Trading Co., Inc.	London	New York	69,480	F. R. Henderson & Co., Inc.	Singapore	New York	279,540
William H. Stiles & Co., Inc.	London	New York	68,580	G. Littlejohn & Co., Inc.	Singapore	New York	151,610
F. R. Henderson & Co., Inc.	London	New York	47,160	Pacific Trading Corp. of America	Singapore	New York	159,660
Various	London	New York	148,680	Charles T. Wilson Co., Inc.	Singapore	New York	32,220
JUNE 6. By the S. S. <i>Kasama</i> , at New York.				Various	Singapore	New York	163,770
Balfour, Williamson & Co.	Colombo	New York	1,104,480	Various	Kaly New York	New York	102,420
The Goodyear Tire & Rubber Co.	Colombo	New York	296,280	JUNE 19. By the S. S. <i>Royal George</i> , at New York.			
JUNE 7. By the S. S. <i>Mississippi</i> , at New York.				L. Littlejohn & Co., Inc.	London	New York	56,000
F. R. Henderson & Co., Inc.	London	New York	170,280	Various	Liverpool	New York	8,620
Various	London	New York	102,420	CENTRALS.			
JUNE 9. By the S. S. <i>Isle</i> , at New York.				MAY 26. By the S. S. <i>Panama</i> , at New York.			
Hood Rubber Co., Inc.	London	New York	103,680	G. Amisack & Co., Inc.	Cristobal	New York	15,814
JUNE 11. By the S. S. <i>Yamagata Maru</i> , at New York.				Isaac Brandon & Bros., Inc.	Cristobal	New York	14,300
United States Rubber Co., Inc.	Colombo	New York	241,920	Various	Cristobal	New York	1,500
J. T. Johnstone & Co., Inc.	Colombo	New York	62,280	MAY 26. By the S. S. <i>Bacchus</i> , at New York.			
F. R. Henderson & Co., Inc.	Colombo	New York	18,720	American Trading Co., Inc.	Mexico	New York	94,900
Rubber Trading Co., Inc.	Colombo	New York	16,740	MAY 29. By the S. S. <i>Lakehurst</i> , at New York.			
Gove & French, Inc.	Colombo	New York	47,160	Pablo, Calvet & Co., Inc.	Cristobal	New York	9,400
Poel & Kelly, Inc.	Colombo	New York	142,800	G. Amisack & Co., Inc.	Cristobal	New York	2,100
Rubber Importers & Dealers Co., Inc.	Colombo	New York	131,760	Demarest Bros., Inc.	Cristobal	New York	300
Edward Maurer Co., Inc.	Colombo	New York	124,380	JUNE 2. By the S. S. <i>Albania</i> , at New York.			
L. Littlejohn & Co., Inc.	Colombo	New York	96,820	Isaac Brandon & Co., Inc.	Cristobal	New York	400
W. R. Grace & Co.	Colombo	New York	55,800	J. Sembrado & Co., Inc.	Cristobal	New York	500
A. C. Fox & Co.	Colombo	New York	154,600	G. Amisack & Co., Inc.	Cristobal	New York	6,500
Fred Stern & Co., Inc.	Colombo	New York	44,280	Heilbron, Wolff & Co., Inc.	Cristobal	New York	1,300
JUNE 11. By the S. S. <i>Lapland</i> , at New York.				W. R. Grace & Co., Inc.	Cristobal	New York	500
L. Littlejohn & Co., Inc.	Liverpool	New York	15,840	Pablo, Calvet & Co., Inc.	Cristobal	New York	109,400
Various	Liverpool	New York	21,060	JUNE 9. By the S. S. <i>Monterey</i> , at New York.			
JUNE 13. By the S. S. <i>Eurydemus</i> , at New York.				G. Amisack & Co., Inc.	Havana	New York	40,500
Charles T. Wilson Co., Inc.	Singapore	New York	301,500	JUNE 11. By the S. S. <i>Lake Wilson</i> , at New York.			
The B. F. Goodrich Co.	Singapore	New York	75,800	Gaston, Williams & Wigmore	Cristobal	New York	8,900
The B. F. Goodrich Co.	Malacca	New York	14,292	W. R. Grace & Co., Inc.	Cristobal	New York	7,200
Rubber Trading Co., Inc.	Singapore	New York	43,560	Mecke & Co., Inc.	Cristobal	New York	3,200
W. G. Ryckman Co., Inc.	Singapore	New York	33,560	Alejandro Angel & Co., Inc.	Cristobal	New York	3,000
J. T. Johnstone & Co., Inc.	Singapore	New York	45,000	J. Sembrado & Co., Inc.	Cristobal	New York	1,400
Aldens' Successors, Ltd.	Singapore	New York	2,826	Pablo Calvet & Co., Inc.	Cristobal	New York	1,100
Aldens' Successors, Ltd.	Penang	New York	225,540	JUNE 12. By the S. S. <i>General H. F. Hodger</i> , at New York.			
F. R. Henderson & Co., Inc.	Penang	New York	156,960	G. Amisack & Co., Inc.	Cristobal	New York	14,300
F. R. Henderson & Co., Inc.	Penang	New York	35,280	Isaac Brandon & Bros., Inc.	Cristobal	New York	400
Hood Rubber Co., Inc.	Penang	New York	2,400	JUNE 13. By the S. S. <i>Advance</i> , at New York.			
L. Littlejohn & Co., Inc.	Penang	New York	2,016,000	G. Amisack & Co., Inc.	Cristobal	New York	12,700
General Rubber Co., Inc.	Singapore	New York	812,560	Isard, Freres & Co., Inc.	Cristobal	New York	4,000
Poel & Kelly, Inc.	Singapore	New York	711,368	Vulcan Trading Co., Inc.	Cristobal	New York	2,300
The Goodyear Tire & Rubber Co.	Singapore	Akron	447,660	Neuss, Hesselin Co., Inc.	Cristobal	New York	3,700
Fred. Stern & Co., Inc.	Singapore	New York	260,440	Mecke & Co., Inc.	Cristobal	New York	3,500
Curry, McPhillips & Co., Inc.	Delhi	New York	150,120	Chas. E. Griffin, Inc.	Cristobal	New York	1,400
Hadden Co., Inc.	Singapore	New York	140,400	Various	Cristobal	New York	100
Edward Maurer Co., Inc.	Singapore	New York	109,800	JUNE 18. By the S. S. <i>Lake Markham</i> , at New York.			
				Rubber Ass'n of America	Cartagena	New York	3,700

AFRICANS.

	Shipment from:	Shipped to:	Pounds.	Totals.
JUNE 9. By the S. S. <i>Lieutenant Sam. Mengel</i> , at New York.				
Rubber Ass'n of America	Secondee	New York	6,555	6,555

PONTIANAK.

APRIL 29. By the S. S. <i>Protestant</i> , at Seattle.				
L. Littlejohn & Co., Inc.	Liverpool	Seattle	26,700	26,700
APRIL 30. By the S. S. <i>Mexico Maru</i> , at Seattle.				
L. Littlejohn & Co., Inc.	Singapore	New York	70,500	70,500
MAY 14. By the S. S. <i>Tancred</i> , at San Francisco.				
L. Littlejohn & Co., Inc.	Singapore	New York	42,900	
Hadden & Co., Inc.	Singapore	New York	88,800	131,700
MAY 20. By the S. S. <i>Tyndarous</i> , at Seattle, via Hongkong.				
L. Littlejohn & Co., Inc.	Singapore	Seattle	110,100	110,100
MAY 21. By the S. S. <i>Senator</i> , at Seattle, via Manila.				
Hadden & Co., Inc.	Bombay	Seattle	119,100	
MAY 25. By the S. S. <i>Bawa</i> , at San Francisco.				
United Malaysian Rubber Co., Ltd.	Singapore	New York	288,960	
L. Littlejohn & Co., Inc.	Singapore	San Fran.	60,300	

JUNE 2. By the S. S. <i>Djembar</i> , at New York.				
United Malaysian Rubber Co.	Soerabaya	New York	67,200	
L. Littlejohn & Co., Inc.	Soerabaya	New York	601,200	
E. S. Kuh & Vank Co., Inc.	Soerabaya	New York	19,800	688,200

JUNE 13. By the S. S. <i>Eurymedon</i> , at New York.				
F. R. Henderson & Co.	Singapore	New York	134,400	
Rubber Trading Co., Inc.	Singapore	New York	88,500	
L. Littlejohn & Co., Inc.	Singapore	New York	761,600	
Federal Products Corp.	Singapore	New York	156,000	
Desmond & Co., Inc.	Singapore	New York	134,100	
Jagger & Co., Inc.	Singapore	New York	635,400	
Fred. Stern & Co., Inc.	Singapore	New York	95,100	
Gaston, Williams & Wigmore	Singapore	New York	72,600	
Hadden & Co., Inc.	Singapore	New York	60,000	
Edward Boustead & Co.	Singapore	New York	56,700	
E. S. Kuh & Vank Co., Inc.	Singapore	New York	28,800	
Various	Singapore	New York	246,000	2,469,200

BALATA.

MAY 26. By the S. S. <i>Panama</i> , at New York.				
Pacific Metal Co., Inc.	Cristobal	New York	6,000	
De Lima, Correa & Cartusio, Inc.	Cristobal	New York	1,350	7,350
MAY 29. By the S. S. <i>Lakehurst</i> , at New York.				
G. Amisnick & Co., Inc.	Cristobal	New York	9,000	9,000

JUNE 2. By the S. S. <i>Alliance</i> , at New York.				
G. Amisnick & Co., Inc.	Cristobal	New York	6,900	15,300
J. S. Sembrado & Co.	Cristobal	New York	5,250	
J. B. Grace & Co.	Cristobal	New York	1,650	
De Lima, Correa & Cartusio	Cristobal	New York	1,300	
Heubron, Wolf & Co.	Cristobal	New York	1,200	

JUNE 6. By the S. S. <i>Maraval</i> , at New York.				
Rubber Ass'n of America	Trinidad	New York	450	
Yeliasis & Co., Inc.	Trinidad	New York	614	
Various	Trinidad	New York	3,300	4,614

JUNE 12. By the S. S. <i>General H. F. Hodges</i> , at New York.				
G. Amisnick & Co., Inc.	Cristobal	New York	4,050	4,050

JUNE 12. By the S. S. <i>Lagland</i> , at New York.				
R. & J. Dick, Ltd.	Liverpool	New York	7,950	7,950

JUNE 16. By the S. S. <i>Matara</i> , at New York.				
J. Peregrine Watson	Trinidad	New York	450	
Various	Trinidad	New York	1,420	6,876

JUNE 18. By the S. S. <i>Bardic</i> , at New York.				
R. & J. Dick, Ltd.	Liverpool	New York	1,536	1,536

GUTTA PERCHA.

JUNE 2. By the S. S. <i>Djembar</i> , at New York.				
United Malaysian Rubber Co.	Soerabaya	New York	54,000	54,000

JUNE 3. By the S. S. <i>Canada</i> , at New York.				
Smith & Schipper	Marseilles	New York	66,000	66,000

JUNE 4. By the S. S. <i>Invincible</i> , at New York.				
Earle Bros.	London	New York	17,700	17,700

GUTTA SIAK.

MAY 14. By the S. S. <i>Tancred</i> , at San Francisco.				
United Malaysian Rubber Co.	Singapore	New York	243,000	243,000

MAY 23. By the S. S. <i>Irion</i> , at New York.				
T. A. Desmond & Co.	London	New York	327,000	327,000

JUNE 4. By the S. S. <i>Invincible</i> , at New York.				
Fred Stern & Co.	London	New York	12,600	12,600

JUNE 12. By the S. S. <i>Lagland</i> , at New York.				
Earle Bros.	Liverpool	New York	25,800	25,800

GUITAS.

JUNE 2. By the S. S. <i>Djembar</i> , at New York.				
Kidder, Peabody & Co.	Soerabaya	New York	163,200	
United Malaysian Rubber Co.	Soerabaya	New York	30,000	193,200

JUNE 4. By the S. S. <i>Invincible</i> , at New York.				
Earle Bros.	London	New York	25,800	
T. A. Desmond	London	New York	24,000	49,800

JUNE 18. By the S. S. <i>Bardic</i> , at New York.				
Earle Bros.	Liverpool	New York	3,900	3,900

OFFICIAL INDIA RUBBER STATISTICS FOR THE UNITED STATES.

IMPORTS OF CRUDE AND MANUFACTURED RUBBER.

	1918.		1919.	
	Pounds.	Value.	Pounds.	Value.
UNMANUFACTURED—free				
India rubber:				
From Portugal			2,600	\$720
United Kingdom	79,828	\$30,568	5,635,298	2,732,804
Canada	179,965	106,487	647,043	286,906
Central America	42,584	14,287	24,669	9,746
Mexico	98,086	36,070	40,274	11,925
Brazil	4,284,554	1,933,197	3,394,825	960,330
Peru	1,933	1,917	199,859	81,068
Other South America	92,356	42,377	345,014	131,698
British East Indies	25,715,149	12,928,351	40,637,290	15,820,145
Dutch East Indies	3,481,272	1,321,738	10,178,932	3,819,947
Other countries	35,598	19,410	758,264	285,821
Totals	33,013,780	\$15,835,990	61,765,830	\$24,141,110
Balata	904,674	180,057	1,121,321	463,493
Guayule			57,243	108,943
Jelutong	624,018	43,430	1,411,499	118,136
Gutta percha			616,106	101,408
Totals	928,692	\$223,487	2,675,269	\$392,000
Rubber scrap	305,320	23,204	848,052	67,724
Totals, unmanufactured	34,247,792	\$16,082,681	65,289,151	\$24,600,234
China (dutiable)	584,958	486,651	743,951	497,984
MANUFACTURED—dutiable				
India rubber and gutta percha				
India rubber substitutes			16,507	283
Totals				

EXPORTS OF DOMESTIC MERCHANDISE.

MANUFACTURED—				
Automobile tires		\$1,108,783		\$3,923,936
All other tires		86,298		37,872
Scrap and old		10,830		588,758
Reclaimed rubber		273,687		44,506
Belt, hose, and packing		378,727		31,361
Rubber boots		29,322		86,094
Rubber shoes		131,487		119,721
Druggists' rubber sundries		65,469		293,396
Insulated wire and cables		38,959		116,524
Other rubber manufactures		593,833		153,342
Totals, manufactured		\$2,493,861		\$6,061,434
Fountain pens		14,945		10,607
Totals				33,905

EXPORTS OF FOREIGN MERCHANDISE.

UNMANUFACTURED—				
India rubber	953,885	\$749,457	433,306	\$199,409
Balata	97,982	60,010	129,669	37,872
Gutta percha	118,254	26,443		
Totals, unmanufactured	1,170,121	\$565,910	498,166	\$237,283
MANUFACTURED—				
India rubber			4,772	
Gutta percha				
Rubber substitutes, elastic, etc.				
Totals, manufactured			4,772	
China	982	746		

EXPORTS OF RUBBER GOODS TO NON-CONTIGUOUS TERRITORIES OF THE UNITED STATES.

MANUFACTURED—				
To Alaska:				
Belt, hose, and packing		\$34,616		\$23,579
Boots and shoes		35,355		31,630
Other rubber goods		4,346		3,880
Totals	9,109	\$74,317	11,477	\$59,089
To Hawaii:				
Belt, hose, and packing		\$8,407		\$4,952
Automobile tires		152,574		91,927
Other tires		5,144		1,558
Other rubber goods		21,358		13,352
Totals		\$190,383		\$111,789
To Philippine Islands:				
Belt, hose, and packing		\$15,117		\$38,794
Boots and shoes		20,258		18,277
Tires		173,871		66,767
Other goods		30,351		66,767
Totals	20,258	\$231,438	25,227	\$190,212
To Porto Rico:				
Belt, hose, and packing		6,988		6,187
Automobile tires		44,443		74,871
Other tires		8,120		3,412
Other rubber goods				6,043
Totals		\$60,024		\$90,513

Details of exports of domestic merchandise by countries during April, 1919, are given on page 602 of this issue.

EXPORTS OF INDIA RUBBER MANUFACTURES AND INSULATED WIRE AND CABLE FROM THE UNITED STATES BY COUNTRIES, DURING THE MONTH OF APRIL, 1919.

EXPORTED TO--	Belting, Hose and Parkings, Value.	Boots.		Shoes.		Druggists' Rubber Stamps, Value.	Tires.		Insulated Wire and Cable, Value.	All Other Rubber Manu- factures, Value.	Totals. Value.
		Pairs.	Value.	Pairs.	Value.		Auto- mobile, Value.	All Others, Value.			
EUROPE:											
British Isles and Madeira Islands	\$1,419			4	\$4	\$5,405	\$13,634	2,355	1,970	24,787	
France	5,230	300	\$51	35,650	4,790	\$740	33,746	16,523	25,392	135,995	
Finland	25,245					6,848	1,968,453	18,105	26,928	264,525	
Germany							3,945	90		4,225	
Iceland and Faroe Islands						118				132	
Netherlands	325					242				617	
Portugal	1,654					114	30,445	20,510	76,043	132,701	
Spain	442			34,322	27,804	486	3,217	1,069	34,760	240,316	
Sweden	107			2,142	2,194	100				552	
Serbia, Montenegro, etc.	1,131					1,695	47,392	86	1,170	100	
Switzerland	1,007			6	10	130,942		120		150,654	
United Kingdom	47,734			50,000	52,441	18,553	129,633	1,077	11,193	395,489	
Sweden	505									2,481	
TOTALS, EUROPE	\$99,121	300	\$51	164,204	\$108,192	\$38,354	\$2,372,636	\$76,583	\$333,525	\$487,214	\$5,055,870
NORTH AMERICA:											
Bermuda	\$141	48	\$172	150	\$100	\$900	\$12		\$274	\$85	\$883
British Honduras	442			1,167	1,778	192	136	\$7	58	62	2,195
Canada	44,058	3,003	10,944	22,204	23,730	25,437	104,658	2,870	9,059	196,937	417,093
Costa Rica	631	1		457	547	730	3,194	135	1,613	1,633	8,568
Cuba	1,719	6		640	611	3	3,119	10	615	495	10,905
Dominican Republic	1,111	66	224	2,744	4,928	954	16,899	1,008	8,001	2,997	38,117
Salvador	1,762			5	18,636	1,492	189		7,518	29,592	
Mexico	88,998	1,032	2,906	3,206	3,174	10,718	75,732	38,165	217,483	274,483	
Monterrey, Languay, etc.	796	6,288	17,710	19,409	21,201	538	6,352	298	2,916	1,557	51,361
Barbados	182	12	82			187	4,003	168	365	50	4,819
Trinidad and Tobago	1,870			1,197	641	388	10,823	35	40,571	1,405	55,933
Other British West Indies	259			278	4,713	409	61	368	8,488		
Danish West Indies	31,229	21	166	31,941	33,644	5,828	298,343	2,147	54,052	16,534	431,388
Danish West Indies	70			9	10		401	97	1,667	37	28,079
Dutch West Indies	1,084			1,077	894	6	25,353	60	1,060	47	38,379
French West Indies	40			3	108	202	60	60	1,346	3,677	
Haiti	1,411			6	12	284	19,001	687	593	2,189	24,267
Dominican Republic											
TOTALS, NORTH AMERICA	\$150,095	10,892	\$32,454	85,272	\$80,169	\$46,501	\$613,034	\$15,419	\$159,097	\$261,601	\$1,358,376
SOUTH AMERICA:											
Argentina	\$10,094					\$3,525	\$35,207	\$17,068	\$6,048	\$952	\$72,894
Bolivia	600					278	448		4,491	28	5,845
Brazil	27,976	72	\$364	1,841	\$1,546	3,595	8,187	130	87,262	9,769	212,799
Chile	99,713	1,212	4,350	3,240	5,141	147,476	5,983	5,069	19,006	333,999	488,606
Colombia	624	36	98	232	2,139	100	6,639	799	1,316	1,886	10,981
Ecuador	1,159			444	331	366	26,996		1,672	548	30,793
British Guiana	1,181			256	273	307	990		1,322	571	6,254
Dutch Guiana	1,297			3		890	25,549	25	8,667	3,527	56,314
Peru	4,013			5,128	4,969	1,076	62,373	142	10,600	4,994	88,097
Uruguay	1,934					892	26,510	35	8,536	1,082	36,994
Venezuela											
TOTALS, SOUTH AMERICA	\$159,494	2,153	\$9,792	13,813	\$12,498	\$15,831	\$421,676	\$18,792	\$177,294	\$43,391	\$858,768
ASIA:											
China	\$331	1	\$5	74	\$61	\$1,105	\$42,141		\$38,093	\$6,947	\$88,683
Ceylon	53			60	38	3,698	1,767		388	2,358	
British India	17,045					101,788	8,442	23,740	17,253	166,906	233,999
Straits Settlements						63,161		6,645	3,964	3,964	73,770
Other British East Indies						4,268		97	201	4,566	
Dutch East Indies	10,666					58,339	13,147	8,769	13,476	10,270	87,600
French East Indies						1,766		950	8	2,724	
Hongkong						5,696		23	449	6,502	
Japan	31,418	155	490	2,413	2,001	6,217	20,851	86	16,028	85,664	114,331
Korea in Asia	100	200	1,226	456	390				1,414	3,130	
Siam						712	9,766		1,553	11,431	
Turkey in Asia	860						36			896	
TOTALS, ASIA	\$60,503	356	\$1,721	4,063	\$3,510	\$15,269	\$309,579	\$16,685	\$78,872	\$52,061	\$548,300
OCEANIA:											
Australia	\$11,607	62	\$388	360	\$193	\$3,545	\$66,194	\$1,276	\$5,406	\$14,102	\$102,113
New Zealand	3,008	3,129	6,308	363	418	2,075	59,584	838	5,960	7,847	86,628
Other British Oceania	20			109	158		4,495	24		274	4,971
French Oceania	144			48	16		16			16	294
German Oceania	14	2	13				464			111	601
Philippine Islands	38,794			25,227	18,277	4,174	58,667	8,100	6,764	62,200	196,976
TOTALS, OCEANIA	\$52,987	3,193	\$6,708	26,136	\$19,090	\$10,394	\$189,652	\$10,263	\$18,146	\$48,818	\$392,058
AFRICA:											
British West Africa	\$8,751			476	\$40		\$4,971		\$54	\$40	\$13,816
British South Africa	2,169	300	\$1,001							2,086	5,762
British East Africa							7,188				7,188
Canary Islands											
French Africa	271	184	803	5	104	\$10					1,470
German Africa	278						1,701			81	5,660
TOTALS, AFRICA	\$11,569	484	\$1,084	486	\$50	\$5	\$17,961		\$54	\$2,207	\$33,801
TOTALS	\$533,769	17,378	\$52,820	293,936	\$223,996	\$116,521	\$3,923,936	\$137,742	\$767,088	\$941,292	\$6,697,167

Compiled by the Bureau of Foreign and Domestic Commerce, Department of Commerce, Washington, D. C.

RUBBER STATISTICS FOR THE DOMINION OF CANADA.

IMPOPTS OF CRUDE AND MANUFACTURED RUBBER.

		1915.		1916.	
		Pounds.	Value.	Pounds.	Value.
UNMANUFACTURED.					
Rubber, gutta percha, etc.	72,745	429,113	86,768	8,9012	
Latex (United Kingdom)	958,411	468,063	111,988	18,3047	
United States	403,300	211,141	734,656	74,9070	
Straits Settlements	4,887	1,000	146,607	38,6179	
Other countries					
Totals	1,085,743	1,096,488	1,360,031	863,2684	
Rubber, processed	3,211	866,071	31,891	1,5158	
Hard rubber sheets and rods	2,795	2,151	1,048	3,193	
Rubber, powdered, and rubber in gutta percha balls	219,229	15,117	33,892	25,941	
Rubber, powdered, and rubber in gutta percha sheets	4,398	6,486	5,347	5,511	
Rubber thread, not covered	7,086	10,636	16,055	19,921	
Rubber substitute					
Totals	861,810	870,841	724,175	103,0766	
Chicle	11,685	87,266	7,901	85,372	
MANUFACTURED.					
Boots and shoes	87,741			241,50	
Belting, hose and packing	6,461			70,143	
Tires	9,209			60,085	
Waterproofed clothing	13,048			16,345	
Other manufactures	122,609			141,703	
Totals	209,668			589,683	

EXPORTS OF DOMESTIC AND FOREIGN RUBBER GOODS.

[illegible]

UNITED KINGDOM RUBBER STATISTICS.

IMPORTS.

UNMANUFACTURED	April		May	
	Pounds	Value	Pounds	Value
Crude rubber: From—				
Dutch East Indies.....	4,928,400	£589,828	3,293,500	£363,536
French West Africa.....	218	1,288	—	—
Gold Coast.....	—	2,238	3,291	4,700
Other African countries.....	400	6,548	1,394	32,585
Peru.....	—	—	1,200	840
Grand total.....	5,388	1,307	37,665	400,880
British India.....	2,567	30,821	16,333	175,604
Straits Settlements and dependencies, including Labuan.....	21,474	251,455	95,554	1,032,840
Federated Malay States.....	19,189	230,132	112,052	1,188,089
Ceylon dependencies.....	20,815	240,538	40,404	437,376
Other countries.....	2,201	25,469	2,863	31,820
Totals.....	116,047	£1,379,690	340,901	£3,658,551
Waste and reclaimed rubber.....	33	93	—	11,295
Totals.....	116,080	£1,379,783	340,702	£3,669,846
Gutta percha.....	587,552	84,185	607,712	83,172

PORTS.

MANUFACTURED				
Boots and shoes, <i>foreign prod.</i>	750	£8,120	8,773	+60,447
Waterproofed clothing.....		9,006		1,092
Automobile tires and tubes.....		51,190		98,756
Motorcycle tires and tubes.....		4,293		1,304
Carriage tires and tubes.....		82		
Bicycle tires and tubes.....		9,489		
Insulated wire.....				
Totals.....	750	£82,819	88,723	+11,788
UNMANUFACTURED				
Waste and reclaimed rubber.....	269,400	£5,982	10,000	+12,132
MANUFACTURED				
Waterproofed clothing.....		38,290		44,181
Boots and shoes, <i>foreign prod.</i>	4,114	4,004	6,651	17,499
Insulated wire.....				37,716
Submarine cables.....		23,714		47,084
Carriage tires and tubes.....		15,298		25,315
Automobile tires and tubes.....	481	290,719		33,719
Motorcycle tires and tubes.....		13,827		1,114
Bicycle tires and tubes.....		20,086		134,972
Other rubber manufactures.....		106,688		208,513
Totals.....	4,595	£430,831	9,710	£633,262

EXPORTS—COLONIAL AND FOREIGN.

COMMODITY	April.			
	1918.		1919.	
	Pounds.	Value.	Pounds.	Value.
Crude rubber				
The Netherlands		11,943		\$ 81,707
France	21,976	\$ 267,244	23,877	267,769
Italy	3,113	40,824	7,530	86,225
United States	2,367	15,753	20,577	193,329
Other countries	665	8,853	7,825	104,673
Total	29,221	\$ 332,676	71,422	\$ 733,639
Waste and reclaimed rubber.				
Total	29,921	\$ 332,676	71,422	\$ 733,639
Gutta percha	4,480	896	16,308	3,044
MANUFACTURED				
Roots and shoes, <i>dozen pairs</i>	6	4,886	13	743
Waterproofed clothing		4		243
Insulated wire		1		13
Automobile tires and tubes		5,923		24,872
Motorcycle tires and tubes		20		35
Electric tires and tubes		669		168
Carriage tires and tubes		667		145
Total	9	\$ 7,355	13	\$ 2,002

RUBBER STATISTICS FOR ITALY.

IMPORTS OF CRUDE AND MANUFACTURED RUBBER.

Twelve Months Ended December 31

	1917.		1918.	
	Quintals. ¹	Lire. ²	Quintals.	Lire.
UNMANUFACTURED.				
India rubber and gutta percha raw and reprocessed				
From Great Britain	11,213	.....	7,155	.....
India and Ceylon	18,356	.....	7,980	.....
Straits Settlements	6,506	.....	31,130	.....
French African Colonies	2,320	.....	6,601	.....
Belgian Congo	1,221	.....	.....	.....
Philippines	19,881	.....	19,925	.....
Other countries	1,475	.....	2,413	.....
Totals	61,275	67,399,200	75,455	83,000,000
Rubber scrap	9,313	1,117,560	2,945	353,400
MANUFACTURED.				
India rubber and gutta percha—				
Threads	399	877,800	671	1,476,200
Sheets:				
Cut sheets	17	37,400	3	6,600
Elastic fabric	32	22,400	.....	.....
Other kinds, including hard rubber	226	271,200	340	408,000
Tubes:				
From cut sheets	1	2,200	4	8,800
Elastic fabric	65	58,500	106	95,400
Other forms	7	7,700	2	2,200
Belting	462	508,200	697	667,700
Rubber-coated fabric—Belts	.....	.....	.....	.....
For carding combs	429	557,700	332	431,600
Other forms	166	249,600	61	91,500
Boots and shoe-liners:				
From France	11,019	.....	7,751	.....
United States	31,666	515,160	4,233	389,316
Other countries	145	.....	.....	.....
Elastic webbing	297	594,000	332	664,000
Clothing and articles for travel	10	30,000	17	51,000
Manufactures from cut sheets:				
Elastic fabric	54	140,400	35	110,000
Tires and inner tubes	1,064	1,396,800	1,584	1,864,800
From France	4,056	.....	2,554	.....
Great Britain	1,944	11,037,600	468	5,445,000
Other countries	132	.....	.....	.....
Other rubber manufactures:				
From France	873	.....	1,113	.....
Great Britain	1,881	5,074,800	2,006	7,537,400
United States	2,221	.....	26	.....
Other countries	4	.....	3	.....
Totals, manufactured	.....	20,280,800	.....	16,788,516
Total imports	.....	87,767,600	.....	102,641,100
EXPORTS OF CRUDE AND MANUFACTURED RUBBER.				
Twelve Months Ended November 30.				
	1917.		1918.	
	Quintals. ¹	Lire. ²	Quintals.	Lire.
UNMANUFACTURED.				
India rubber and gutta percha—raw and reclaimed				
To Spain	1,549	.....	1,778	.....
United States	2,889	.....	539	.....
Totals	4,438	1,553,800	2,317	.....
MANUFACTURED.				
India rubber and gutta percha—				
Threads	218	479,600	82	1,400
Sheets:				
Cut sheets	6	12,000	21	42,000
Elastic fabric	31	24,800	.....	20,900
Insulated wire	2	1,000	3	1,500
Other kinds, including hard rubber	83	83,000	4	42,000
Tubes:				
From cut sheets	7	15,400	29	41,800
Elastic fabric	314	551,900	.....	.....
Other forms	207	291,650	161	379,950
Belting	12	12,000	87	87,000
Rubber-coated fabric	.....	265,200	.....	55,000
Belts	2,036	688,400	1,205	2,289,500
Clothing and articles for travel	39	109,200	.....	28,000

Twelve Months Ended December 31

	1917		1918	
	Quintals. ¹	Lire ²	Quintals.	Lire.
Manufactures of India rubber				
and gutta percha, etc.				
Raw gut sheets	96	211,200	77	169,400
Latex fabric	177	194,700	131	144,100
Tires and tubes				
To France	3,348		2,942	
Great Britain	7,584		2,001	
Spain	128		84	
Switzerland	15		23	
India and Ceylon	2,271		579	
Dutch East Indies	350	25,022,400	774	10,830,300
Straits Settlements	1,929		131	
Australia	144		158	
Brazil	1,120		529	
Argentina	1,411		220	
Other countries	1,032		801	
Other rubber manufactures:				
To France	211		301	
Great Britain	168		128	
Spain	34		12	
Switzerland	246		161	
Egypt	17	1,501,000	36	1,031,000
Argentina	414		140	
Brazil	165		80	
Uruguay	84		9	
Other countries	162		163	
Totals, manufactured		2,342,750		4,556,550
Total exports		38,896,050		16,322,750

¹ A quintal = 230.46 pounds.² Lire = \$0.193.THE MARKET FOR SCRAP RUBBER.
NEW YORK.

THERE HAS BEEN NO IMPROVEMENT in the scrap rubber market over the generally poor condition that has characterized it for the past few months. The most important factor in maintaining this condition is the weakness in crude rubber and the large spot supplies of it available in New York. Scrap dealers and reclaimers are considering the possibilities for export trade to Europe.

Prices on all grades of scrap rubber are nominal and stock movements are at a minimum. The business is confined practically to dealings in mixed auto tires, repairables and automobile fabric.

The following quotations are nominal.

QUOTATIONS FOR CARLOAD LOTS DELIVERED.
JUNE 25, 1919.

Prices subject to change without notice.

BOOTS AND SHOES			
Arctic tops	lb.	01 1/4 @	01 1/4
Boots and shoes	lb.	07 1/4 @	08
Trimmed arctic	lb.	06 1/4 @	06 1/4
Untrimmed arctic	lb.	05 1/4 @	05 1/4
HARD RUBBER			
Battery jars, black compound	lb.	.01 @	
No. 1, bright fracture	lb.	.24 @	.25
INVER TUBES			
No. 1, old packing	lb.	.20 @	.21
No. 2, new packing	lb.	.24 @	
Red	lb.	.10 @	.10 1/4
Red	lb.	.10 1/4 @	.10 1/4
MECHANICALS:			
Black scrap, mixed, No. 1	lb.	.04 1/4 @	.04 1/4
No. 2	lb.	.03 1/2 @	.03 1/2
Car springs	lb.	.04 1/4 @	.04 1/4
Heels	lb.	.03 1/4 @	.03 1/4
Horse-shoe pads	lb.	.03 @	.04
Hose, air-brake	lb.	.04 1/2 @	.04 1/2
fire, cotton lined	lb.	.01 1/4 @	.01 1/4
Insulated wire stripping, free from fiber	lb.	.03 1/2 @	.04
Mattings	lb.	.01 1/2 @	.01 1/2
Packing	lb.	.01 1/2 @	.01 1/2
Red scrap, No. 1	lb.	.01 1/2 @	.01 1/2
No. 2	lb.	.00 1/2 @	.10
White scrap, No. 1	lb.	.00 1/2 @	.07
No. 2	lb.	.00 1/2 @	.09 1/4
TIRES, PNEUMATIC:			
PNEUMATIC:			
Auto valves, No. 1	lb.	.09 1/4 @	.10 1/4
No. 2	lb.	.06 @	.06 1/4
Bicycle	lb.	.04 1/4 @	.04 1/4
Standard white auto	lb.	.05 1/4 @	.05 1/4
Standard mixed auto	lb.	.03 @	.04
Stripped, unguaranteed	lb.	.01 1/4 @	.03 1/4
White, G. & G. M. & W., and U. S.	lb.	.05 1/4 @	.05 1/4
SOLID:			
Carriage	lb.	.04 1/4 @	.04 1/4
Iron	lb.	.01 1/4 @	.01 1/4
Truck	lb.	.04 1/4 @	.04 1/4

THE MARKET FOR COTTON AND OTHER FABRICS.
NEW YORK.

UNFAVORABLE WEATHER, reduced acreage and scarcity of labor are responsible for the strong position of the market for American cotton during the past month. According to the general outlook, only a moderate crop is expected. On June 2, middling uplands, spot, was 32.80 cents, and with the exception of a decline early in the month, the market has advanced and June 23 the quotation was 33.50 cents.

The following report concerning the Egyptian, Arizona and Sea Island cotton situation is furnished by John Malloch & Co.:

EGYPTIAN COTTON. Prices have not changed, the selling being still controlled by the commission. This condition, however, will probably change after July 31, as the Cotton Control Commission will cease to buy cotton after that date. There is a very large stock of Egyptian cottons of all kinds in Alexandria, but thus far no plan has been announced for disposing of this accumulation, which is owned by the commission. The future contract market in Alexandria is still closed, although the Liverpool Egyptian future market reopened on June 2. The general tendency is for firmness in fall deliveries, figures being quoted a cent or two above present fixed prices. The growing crop in Egypt is doing well thus far, but a water scarcity is feared later on, which may affect the quality of the cotton rather than the quantity. Acreage estimates are not yet available, but it is understood that there is considerable increase over last season.

AMERICAN EGYPTIAN COTTON. Conditions in Arizona have been favorable to the growing crop, and it is expected that from 45,000 to 50,000 bales will be grown in the Salt River valley during the present season. Last year's crop is practically sold, but small quantities of desirable cotton are still available at around 53 to 55 cents for prompt delivery. New crop prices are not available at this time.

SEA ISLAND COTTON. The better grades of Sea Island cotton are becoming very scarce and hard to buy, most holders desiring to sell round lots which contain a fair quantity of low grades. A first cost price of 60 cents is being asked in the South. There have been sales of average extra choice recently at 61 cents, but it would take at least 63 cents to move any appreciable quantity. This marks a rise of fully 10 cents per pound since early May.

Various estimates of the growing crop in Georgia and Florida agree that there has been a tremendous reduction in acreage, and the average guess places the probable number of bales which will ultimately be ginned next fall at around 25,000, as compared with a normal crop of 90,000 to 120,000 bales a short time ago.

DUCKS AND DRILLS. The market has been exceedingly strong and all cloths of standard construction are scarce. Prices have all advanced.

RAINCOAT FABRICS. Stocks appear to be all sold for several months ahead. Prices are advancing in the face of a steady demand for all grades.

TIRE FABRICS. The steady call for tire fabrics of all grades has continued through the month with a noticeable scarcity of standard grades. The price undertone is firm and quotations are a little lower than last month.

NEW YORK QUOTATIONS.

JUNE 25, 1919.

Prices subject to change without notice.

ASBESTOS CLOTH:			
Brake lining, 2 1/2 lbs. sq. yd., brass or copper insertion	lb.	.85 @	
2 1/2 lbs. sq. yd., brass or copper insertion	lb.	.90 @	
BURLAPS:			
32-ounce	100 yards	9.25 @	
32-ounce		10.25 @	
40-7 1/2-ounce		11.65 @	
40-8-ounce		11.75 @	
40-10-ounce		12.75 @	
40-10 1/2-ounce		13.00 @	

45—7½-ounce.....	100 yards	12.75 @
45—8-ounce.....		13.00 @
45—9½-ounce.....		15.00 @
48—10-ounce.....		15.25 @
DRILLS:		
38-inch 2.00-yard.....	yard	.32½ @
40-inch 2.47-yard.....		.26½ @
52-inch 1.99-yard.....		.36½ @
52-inch 1.95-yard.....		.35½ @
60-inch 1.53-yard.....		.47½ @
DUCK:		
CARRIAGE CLOTH:		
38-inch 2.00-yard enameling duck.....	yard	.33 @
38-inch 1.74-yard.....		.37½ @
72-inch 16.66-ounce.....		.73 @
72-inch 17.21-ounce.....		.75½ @
MECHANICAL:		
Hose.....	pound	.60 @
Belting.....		.63 @
HOLLANDS, 40-INCH:		
Acme.....	yard	.23 @
Endurance.....	yard	.27½ @
Penn.....	yard	.30 @
OSNABURGS:		
40-inch 2.35-yard.....	yard	.26½ @
40-inch 2.48-yard.....		.25½ @
37½-inch 2.42-yard.....		.26 @
RAINCOAT FABRICS:		
COTTON:		
Bombazine 64 x 60 water-repellent.....	yard	.20 @
60 x 48 not water-repellent.....		.18 @

TIRE FABRICS

JENCKES
SPINNING
COMPANY

PAWTUCKET
RHODE ISLAND

Cashmeres, cotton and wool, 36-inch, tan.....	yard	.77½ @
cotton, blue and black.....		.85 @
Oxford.....		.75 @
Twills 64 x 72.....		.30 @ .32½
64 x 102.....		.35 @ .40
Twill, mercerized, 36-inch, tan and olive.....		.35 @
blue and black.....		.36 @
navy.....		.37½ @
Tweed.....		.50 @ .67½
printed.....		.16 @ .22
Plaids 60 x 48.....		.18½ @
56 x 44.....		.17½ @
Repp.....		.38½ @ .45
Surface prints 60 x 48.....		.19½ @
64 x 60.....		.21 @

IMPORTED WOOLEN FABRICS SPECIALLY PREPARED FOR RUBBERIZING

—PLAIN AND FANCIES:

63-inch, 3¼ to 7½ ounces.....	yard	1.30 @ 3.50
36-inch, 2¾ to 5 ounces.....		.75 @ 1.90

IMPORTED PLAID LINING (UNION AND COTTON):

63-inch, 2 to 4 ounces.....	yard	.90 @ 1.85
36-inch, 2 to 4 ounces.....		.55 @ 1.10

DOMESTIC WORSTED FABRICS:

36-inch, 4¼ to 8 ounces.....	yard	.60 @ 1.25
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DOMESTIC WOVEN PLAID LININGS (COTTON):

36-inch, 3¼ to 5 ounces.....	yard	.19 @ .30
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SHEETINGS:

JACKET:

Delaware.....	yard	.23 @
Schuylikill.....	yard	.26 @

SILKS:

Canton, 38-inch.....	yard	.38½ @
Schappe, 36-inch.....		.63 @

TIRE FABRICS:

17¼-ounce Sea Island, combed.....	pound	1.40 @
17¼-ounce Egyptian, combed.....		1.20 @
17¼-ounce Egyptian, carded.....		1.12 @
17¼-ounce Peelers, combed.....		1.10 @
17¼-ounce Peelers, carded.....		.84 @

*Nominal.

SEA ISLAND CROP MOVEMENT.

FROM AUGUST 1, 1918, TO MAY 30, 1919.

	Receipts	
	1918-19.	1917-18.
Stock on hand, August 1, 1918—		
Savannah, 15247; Charleston, 517.....	bales 15,764	10,444
Received at Savannah (gross).....	14,696	24,729
Received at Charleston.....	9,959	6,966
Received at Jacksonville.....	12,028	27,589
Received at Brunswick.....	.....	.....
Received at Norfolk.....	.....	.....
Total.....	52,447	60,328
Less exports.....	45,049	49,878
Stock March 30, 1919—		
Savannah, 6,747; Charleston, 651.....	7,398	10,450
Crop in sight at all ports to date.....	36,653	58,881
	Exports	
	To	
	Great Britain.	North Mills. South Mills.
From—		
Savannah.....	753	160 21,029 918
Charleston.....	182	8,337 1,306
Jacksonville.....	.....	12,028
Brunswick.....	.....	.....
Norfolk.....	.....	.....
Total.....	965	160 41,394 2,224
1917-18.....	128	142 47,251 2,357
.....	3727	118 55,857 7,133
.....		366 45,049
.....		49,878
.....		74,829

¹Increase. ²Decrease.

(Compiled by John Mallock & Co., Savannah, Georgia.)

EGYPTIAN COTTON CROP MOVEMENT

	1918-1919	1917-1918	1916-1917
Manchester	91,087	91,597	181,111
Other United Kingdom ports	5,537	115,784	1,000,000
Total shipments to Great Britain	96,624	207,381	1,181,111
India	10,000	10,000	10,000
Switzerland	20,379	3,350	10,000
Greece	3,963	550	10,000
Total shipments to Continent	113,441	51,946	10,000
Total	210,065	259,327	1,191,111
To United States	45,954	38,763	10,000
Total shipments to all parts	450,765	466,210	1,201,111

THE MARKET FOR CHEMICALS AND COMPOUND-INGREDIENTS.

NEW YORK.

THE MARKETS for the base metals, pig lead, and spelter, have been marked by little change except a slight tendency to advance toward the close.

The demand for rubber chemicals and ingredients has improved since last month and the price situation is about the same, with the exception of a lower tendency noted in certain materials.

ANILINE. There has been a good demand the entire month with the price steady, between 21 and 22 cents per pound.

BARYTES. The demand has steadily increased and has become fairly active. The price remains steady at \$21.50 per ton.

BENZOL. This material is gaining in use as a motor fuel, which tends materially to increase the demand and stiffen the price, which remains firm at from 22 to 27 cents per gallon.

CARBON TETRACHLORIDE. The demand has continued weak during the month, with prices unchanged.

GILSONITE. This is sold at higher prices than those prevailing before the heavily increased freight rates went into effect, but there is this advantage that shipments can now come forward all rail at the same rate as applies for rail and water, insuring quicker deliveries and arrivals in better condition.

LITHARGE. There has been a fair demand, and the price steady at 10½ cents per pound.

LITHOPONE. The demand has been particularly active the entire month, following the reduction of the price to 6½ cents per pound. Early in the month 144 tons which had been held by the United States Navy was marketed at auction. Manufacturers are said to be working to capacity to meet the growing demand.

WAXES. These are higher. All importations are taken up quickly by the trade. Carnauba waxes were quoted two weeks ago at about 4 cents per pound below the primary market prices, but the market is gradually working up to a parity, prices having advanced an average of 6 to 7 cents per pound within the last month. There is a heavy demand for montan wax, with no stock available, and there will be no stock until trading with Germany is opened up.

WHITE LEAD. There is a very steady call for white lead. The price remains fixed and is not expected to change before November 30.

WHITING. The market for whitening holds steady. Receipts of foreign supplies are influencing lower prices.

ZINC OXIDE. American-made zinc oxides are said to equal in quality the best grades of foreign manufacture. This condition bids fair for a good American export trade in this product. The domestic demand continues to be very active.

The New Jersey Zinc Co. has abolished the usual quarterly price schedule. This indicates that contracts will be made with the trade for a longer period than formerly, and should have a beneficial effect on the market for all lead products.

NEW YORK QUOTATIONS.

JUNE 25, 1919.

Prices subject to change without notice.

ACCELERATORS, ORGANIC.

Accelerator N. C.	lb.	80 @
Accelerator	lb.	3.70 @
Accelerator	lb.	55 @
Accelerator	lb.	1.00 @
Accelerator	lb.	85 @
Accelerator	lb.	85 @ 1.10
Accelerator	lb.	3.50 @
Accelerator	lb.	50 @
Accelerator	lb.	50 @

ACCELERATORS, INORGANIC.

Lead, dry red (bbls.)	lb.	101½ @
sublimed blue (bbls.)	lb.	108½ @
sublimed white (bbls.)	lb.	108½ @
white, basic carbonate (bbls.)	lb.	109 @
Lead, white	lb.	109 @
Litharge, domestic	lb.	109½ @
sublimed	lb.	110 @
Magnesium, carbonate	lb.	111 @
calcined heavy (Manhattan)	lb.	115 @
Magnesium oxide	lb.	115 @
Magnesium	lb.	115 @

ACIDS.

Acetic, 28 per cent (bbls.)	ent.	2.75 @ 3.00
glacial, 99 per cent (carboys)	ent.	12.00 @ 12.44
Cresylic (97% straw color)	gal.	.90 @
Muriatic, 20 degrees	gal.	1.20 @ 1.40
Nitric, 36 degrees	gal.	1.00 @ 1.20
Sulphuric, 66 degrees	ton	16.00 @ 24.00

ALKALIES.

Caustic soda, 76 per cent (bbls.)	lb.	14½ @
Soda ash (bbls.)	lb.	14½ @

COLORS.

Black:		
Blue, powdered	lb.	.05 @
Carbon, black (sacks, factory)	lb.	.09 @ .18
Drop	lb.	.05½ @ .15
Violet black	lb.	.10 @ .30
Lampblack	lb.	.15 @ .25
Oil soluble aniline	lb.	.40 @
Rubber black	lb.	.07 @
Blue:		
Cobalt	lb.	.25 @ .30
Prussian	lb.	.60 @ .70
Ultramarine	lb.	.18 @ .40

BROWN.

Iron oxide	lb.	.04 @
Senna, Italian, raw and burnt	lb.	.15 @
Stamper	lb.	24.00 @
Umber, Turkey, raw and burnt	lb.	.05 @ .06½
Vandyke	lb.	.02½ @ .03½

GREEN.

Chrome, light	lb.	.35 @ .40
medium	lb.	.40 @ .50
dark	lb.	.50 @ .60
commercial	lb.	.08 @ .15
Oxide of chromium (casks)	lb.	.75 @

RED.

Antimony, crimson, sulphuret of (casks)	lb.	.48 @
crimson, "Mephisto" (casks)	lb.	.55 @
Antimony, golden, sulphuret of (casks)	lb.	.25 @
golden, "Mephisto" (casks)	lb.	.28 @
golden sulphuret (States)	lb.	.24 @ .25
red sulphuret (States)	lb.	.24 @
vermillion sulphuret	lb.	.50 @
Arsenic, red sulphide	lb.	.25 @
Indian, pure bright	lb.	.14 @ .16
Tollidine toner	lb.	3.50 @
Iron oxide, reduced grades	lb.	.14 @
pure bright	lb.	.14 @
Oil soluble aniline, red	lb.	1.80 @
orange	lb.	1.25 @
Oxymony	lb.	.18 @
Vermilion	lb.	.03 @
Vermilion, English, pale, medium, dark	lb.	1.45 @
crimson	lb.	.25 @

WHITE.

White, American, superior	lb.	.58 @
Lithopone, domestic	lb.	.06½ @ .06¾
Ponolith (carloads, factory)	lb.	.06½ @ .06¾
Rubber-makers' white	lb.	.06½ @ .06¾

White:

Zinc oxide, Horsehead (less carload, factory):		
"XX red" .....	.09 @	.09%
"Special" .....	.09%	@ .09%
French process, red seal .....	.09%	@ .09%
green seal .....	.10%	@ .10%
white seal .....	.11%	@ .11%
(State) .....	.09 @	
Azo, ZZZ, lead free (less carload fac- tory) .....	.09 @	@ .09%
ZZ, under 5% leaded (less carload factory) .....	.08%	@ .08%
Z, 8-10% leaded (less carload factory) .....	.08 @	@ .08%
Zinc sulphide	*.06%	@ .06%
Yellow:		
Cadmium, sulphide, yellow, light, orange	2.00 @	
red	1.85 @	
Chrome, light and medium .....	.24 @	
Ochre, domestic .....	.02 @	.03
imported .....	.05 @	.06
Oil soluble aniline	1.20 @	
Zinc chromate .....	.45 @	

COMPOUNDING INGREDIENTS.

Aluminum flake (bbls. factory)	26.60 @	@ 28.00
(sacks factory)	23.75 @	@ 25.00
Aluminum oxide	*.18 @	
Ammonia carbonate, powdered .....	.13%	@ .13%
Asbestine (carloads)	25.00 @	
Asbestos (bags)	35.00 @	
Avioils compound	1 @	
Barium, carbonate, precipitated	55.00 @	
sulphide, precipitated .....	.07 @	
dust .....	.03%	
Barytes, pure white	35.00 @	
off color	25.00 @	
uniform floated	35.00 @	
Basofo .....	.03%	
Blanc fixe .....	.03%	@ .04%
Bone ash .....	.05 @	
Chalk, precipitated, extra light .....	.05 @	.05%
precipitated, heavy .....	.04 @	.04%
China clay, domestic	8.50 @	@ 20.00
imported	19.00 @	@ 23.50
Cork flour .....	.53 @	
Cotton linters, clean mill run, f. o. b. factory .....	.04%	@
Fossil flour (powdered)	60.00 @	
(bolted)	65.00 @	
Diatomite .....	.03 @	
Glue, high grade .....	.30 @	.40
medium .....	.16 @	.28
low grade .....	.12 @	.15
Graphite, flake (400-pound bbl.) .....	.10 @	.25
amorphous .....	.04 @	.08
Ground glass FF. (bbls.) .....	.93 @	
Infusorial earth (powdered)	60.00 @	
(bolted)	65.00 @	
Mica, powdered .....	.05 @	.05%
Pumice stone, powdered (bbl.) .....	.05 @	.08
Putten stone, powdered .....	.02%	@ .04%
Rub-R-Glu	*.20 @	.25
Shavene clay	15.00 @	
Silex (silica)	22.00 @	@ 40.00
Soapstone, powdered, domestic	20.00 @	@ 50.00
Starch, powdered corn (carload, bbls.) .....	.59 @	
(carload, bags) .....	.57 @	
Talc, American	20.00 @	@ 40.00
Tripoli earth, air-floated	25.00 @	
Tyre-lith	80.00 @	
Whiting, Alba (carloads) .....	.80 @	.90
Columbia .....	.80 @	
commercial	1.30 @	1.25
English cliffstone .....	.75 @	2.00
gilders	1.30 @	1.35
Paris, white, American	1.50 @	1.60
Quaker .....	.70 @	.80
Wood pulp, imported .....	.03%	@
Wood flour, American .....	.01%	@

MINERAL RUBBER.

Gilsonite	47.50 @	
Genasco (carloads factory)	55.00 @	
less carloads factory)	57.00 @	
Hard hydrocarbon	30.00 @	
R-X	100.00 @	

MINERAL RUBBER:

K. M. R.	ton	50.00 @
M. R.	ton	*65.00 @
M. R. X.	ton	100.00 @
Pioneer, carload, factory	ton	50.00 @
less carload, factory	ton	55.00 @
Raven M. R.	ton	50.00 @ .70
Refined Elaterite	ton	175.00 @
Richmond	ton	72.00 @
No. 64	ton	45.00 @
118/320 M. P. hydrocarbon	ton	50.00 @ \$5.00
Robertson M. R. Special (carloads, factory)	ton	80.00 @
M. R. (carloads, factory)	ton	55.00 @
M. R. less carloads, factory)	ton	60.00 @
Robbison (carloads, factory)	ton	50.00 @
less car. factory)	ton	60.00 @
Walpole rubber flux (factory)	lb.	.05 @

OILS.

Castor, No. 1, U. S. P.	lb.	.25 @
No. 2, U. S. P.	lb.	.23 @
No. 3, U. S. P.	lb.	.20 @
Corn, refined Argon	cwt.	25.06 @
Cotton	lb.	.24 @
Glycerine (98 per cent)	lb.	.20%
Glycerole	lb.	.55 @
Linseed, raw (carloads)	gal.	1.87 @
Linseed compound	gal.	*.85 @
Palm (Niger)	lb.	.15%
Peanut	lb.	.27%
Petrolatum	lb.	.09%
Petroleum grease	lb.	.03%
Pine, steam distilled	gal.	.76 @
Rapedseed, refined	gal.	1.50 @
blown	gal.	1.60 @
Rosin	lb.	.10 @
Soya bean	lb.	.35 @ .38
Tar	lb.	.35 @

RESINS AND PITCHES.

Castella gum	lb.	.60 @
Tar, retort	gal.	.75 @
Kiln	lb.	13.00 @
Pitch, Burgundy	lb.	*.07%
coal tar	lb.	.02%
Pine tar	lb.	.03%
ponto	lb.	.14 @
Resin, Pontianak, refined	lb.	None @
granulated	lb.	None @
fused	lb.	None @
Rosin, K. powdered	bbl.	17.50 @
Shellac, fine orange	lb.	1.00 @

SOLVENTS.

Acetone (98.99 per cent drums)	lb.	.14 @
methyl (drums)	gal.	1.10 @
Benzol, water white	gal.	.23 @ .24
Beta-naphthol, resublimed	lb.	.95 @
Carbon bisulphide, ordinary grade	lb.	.45 @
tetrachloride (drums)	lb.	.06%
Naphtha, motor gasoline (steel bbls.)	gal.	.24%
73 @ 76 degrees (steel bbls.)	gal.	.24%
68 @ 70 degrees (steel bbls.)	gal.	None @
Solvent	gal.	.30 @
V. M. & P. (steel bbls.)	gal.	.31%
Toluol, pure	gal.	.24 @ .25
Turpentine, spirits	gal.	1.11 @
wood	gal.	.92 @ 1.02
Osmaco reducer	gal.	.30 @
Xylol, pure	gal.	.35 @ .40
commercial	gal.	.30 @ .35

SUBSTITUTES.

Black	lb.	.14 @ .18
White	lb.	.12 @ .23
Brown	lb.	.15 @ .23
Brown factice	lb.	.29 @ .21
White factice	lb.	.10 @ .23
Paragol soft and medium (carloads)	cwt.	19.08 @
hard	cwt.	18.58 @

VULCANIZING INGREDIENTS.

Lead, black hyposulphite (Black Hypo)	lb.	.33 @ .39
Orange mineral, domestic	lb.	1.13%
Sulphur chloride (drums)	lb.	.06%
Sulphur, flour, Columbia brand (carloads)	cwt.	2.99 @
pure soft (carloads)	cwt.	2.90 @
superfine (carloads, factory)	cwt.	2.80 @
(See also Colors-Antimony)		

WAXES.

Wax, beeswax, white	lb.	.68 @ .78
ceresin, white	lb.	1.64 @ .17
carnauba	lb.	.56 @ .93
cokerite	lb.	.80 @
green	lb.	.80 @
montan	lb.	.35 @
substitute	lb.	.20 @
paraffine, refined 118/120 m. p. (cases)	lb.	.08%
123/125 m. p. (cases)	lb.	.08%
128/130 m. p. (cases)	lb.	.11 @

*Nominal.



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TABLE OF CONTENTS ON LAST PAGE OF READING.**THE RISE OF RUBBER AND FABRIC SHOES.**

RUBBER, THE GREAT SUPPLANTER, is making as remarkable headway in the footwear field as it has made in many other lines of manufactured goods. Time was, for example, when all fire hose and all belting was of leather. Now all fire hose is of rubber and fabric, likewise most belting. Rubber is constantly entering new fields—often with difficulty, fighting its way into favor and eventually, through superiority, economy or both, supplanting or partially supplanting its rivals.

As most innovations gain momentum slowly, so it was at first in introducing rubber and fabric shoes for general summer wear. The merits of the early so-called "tennis" shoes for athletic sports and outing purposes were quickly recognized and a large annual output resulted. These shoes were efficient and economical, but not attractive to the eye. Then came the perfection of leather-topped fiber soles and heels, whereupon rubber men began to foresee the unlimited possibilities which this development opened up. High and low shoes of many styles for men, women and children were quickly brought out with duck uppers of several colors, and by the application of welt construction, Louis heels, and or-

namental bows and buckles, a new type of pumps, Oxfords and Bals was produced that combined style, comfort and serviceability with moderate cost. Heavy waterproof work shoes for both indoor and outdoor wear were also placed on the market at \$2.50 to \$3.50 per pair.

Only the sales problem of bringing about the general adoption of the new footwear appeared to remain. The shoes would have sold on their fine appearance alone but for the skepticism and conservatism of human nature. Advertising did much, however, and the trade was growing satisfactorily at the outbreak of the war. Then came the leather shortage and increasing wages, and prices began to soar until at present high-grade leather shoes for both men and women that formerly sold at \$5 to \$10 per pair are now bringing nearly three times those figures.

Persons obliged to combat the rising cost of living turned to the new footwear and found it as durable as it was attractive and learned through experience that the claims of greater summer comfort were not overstated. To-day the rubber and fabric shoe is the most popular hot-weather footwear in the world. Millions of persons are wearing it and the demand is constantly greater than the supply, despite ever-increasing manufacturing facilities. This, however, is but a beginning. All-weather footwear made by great rubber factories is already popular. The problem has become one not of sales but of production. The new footwear may never completely supplant leather shoes, yet this development of the rubber industry promises to become second only in magnitude to that of the rubber tire.

WORLD STANDARDIZATION OF WEIGHTS AND MEASURES.

ONE OF THE MOST PECULIAR ANOMALIES in history is the fact that the weights and measures of Great Britain and of the United States are German, whereas those of Germany are British. The British pounds, both sterling and avoirdupois, originated with the old German Osterling Hanseatic League, which controlled the trade of England for hundreds of years until ousted by Queen Elizabeth. The Germans forced these old standards on the British, who in turn imposed them on the American colonies. But the remarkable fact is that, despite their absurd complications, they continue in use among the English-speaking peoples, although as long ago as 1871 Germany adopted the simpler decimal system of weights and measures invented by that great Briton, James Watt, in 1783.

Just as all the world has adopted the alphabet of letters for written expression, each people in its own language, and the Arabic numerals for mathematical computation, so there is need of a universal scheme of weights and measures such as the metric system affords. To-day America and Britannia are the only civilized nations that have not adopted this system and thereby find themselves in the strange position of lagging behind the march of

progress. That their foreign commerce is greatly hampered by failure to scrap these obsolete standards is obvious, and that both must eventually accept the new order of things cannot be doubted.

With its raw material produced in the tropics and manufactured in the temperate zones, the rubber industry is of such a pronounced international character that it would unquestionably be benefited by universal employment of the metric system, and the American rubber trade at least will probably lend its hearty support to the campaign for adoption by America and Britannia being waged by the World Trade Club of San Francisco.

PAY FOR RUBBER PLANTATION LOSSES.

ANTICIPATING THE LIKELIHOOD of early Congressional action on the Mexican problem, the National Association for the Protection of American Rights in Mexico is circulating blank forms on which owners of Mexican property who have suffered loss through revolutionary activities may summarize their claims against the Mexican Government for presentation to Congress by the association.

The information sought on which to base claims includes description and location of property lost, destroyed, damaged or confiscated, and how; the names of the faction responsible and of the leader of the party, also the amount of the claim.

Full particulars are asked regarding all American citizens killed or injured and regarding all American women and children outraged. Corporations are asked to state the number of male and female stockholders and the amount of money paid in by stockholders.

The losses of the American rubber interests in Mexico will alone make a large total. Hundreds of thousands of acres of rubber plantations have of necessity been abandoned and buildings destroyed. Claims for these losses should be satisfied.

THE EMPLOYMENT MANAGER.

EMPLOYERS have come to recognize that the science of hiring men and keeping them requires an expert with as keen an intelligence as is demanded in the sales or purchasing department. Selecting the proper man for the proper place, grading employees according to their capabilities and starting them out with the realization that loyalty to the firm will be recognized as a prerequisite to advancement are essential qualities in the makeup of the employment manager. One who possesses proper qualifications is invaluable in any industrial establishment and given a free hand can make his department of the first importance. In dealing with the men he must have not only a few simple rules of procedure, but a knowledge in detail of the requirements of the work and the fitness, ability and adaptability of the help.

Once hired, a man should be kept unless experience demonstrates absolute unfitness or lack of adaptability.

Ceaselessly the employment manager must see that the little causes of friction which constantly arise in the conduct of a shop or factory are ironed out quickly and quietly. Tact in dealing with political, religious and racial questions is also a prime requisite. When it is necessary to transfer a man from one department to another, the reasons therefor should be noted as a guide to the future.

There is, of course, such a thing as too much efficiency, so much that the human element is lost sight of. If the employee comes to feel that he is but a cog in the great machine, a unit in a card-indexing system, the very object for which the employment manager is working may be defeated. There is no definite standard by which an employment manager can regulate the conduct of his department, but a careful checking up of results at the end of a year will show whether he has been successful or not. His job is in a class by itself, requiring a combination of experience, diplomacy and knowledge of human nature, second only to the head of the administrative offices itself.

PATENTS UNDER THE PEACE TREATY.

OF MUCH MOMENT to the rubber and allied industries is that section of the peace treaty which provides that Americans who were prevented during the war from patenting their inventions or registering trade-marks in Germany or other signatory countries may now do so within six months after the treaty became effective. Patents may be renewed in Germany or any of the other signatory countries by fulfilling the requirements of the war period beginning August 1, 1914.

The licensing and liquidation of German-owned American patents by the United States during the war are recognized as valid and remain effective. Germany waives the liability of the United States for infringement, but the right of Americans to sue for infringement during the war by the German Government or German individuals is not waived. A list of the alien enemy rubber patents available under license was published in *THE INDIA RUBBER WORLD*, July 1, 1919.

Had Germany been able to procure the amount of rubber she required, the number of American infringement suits would doubtless have been considerably increased.

AMERICAN SHIPS LOADED WITH GOODS WILL SOON SET sail for Germany. England and France have already issued permission for trading with the Teuton. The much-talked-of boycott therefore falls to the ground. If one sells to Germany, one must buy from Germany, which is of course sensible and unavoidable.

THE CORN PRODUCTS REFINING CO. AT ITS GREAT plant at Argo, Illinois, will, hereafter, refuse to employ any who do not speak English. Some 700 aliens, said to be I. W. W.'s, will be dropped through this ruling. Tickets to Russia and a speedy bon voyage would be an added relief.

The Sumatra Plantation of the United States Rubber Plantations, Inc.



THIS IS A GENERAL VIEW OF THE HOSPITAL AT THE SUMATRA PLANTATION OF THE UNITED STATES RUBBER PLANTATIONS, INC., WHERE EMPLOYEES RECEIVE THE BEST OF MEDICAL ATTENTION.

AN EXAMINATION of the statistics of the rubber industry reveals the singular fact that while America is the largest consumer of rubber in the world and has invested millions in the manufacture of rubber goods, the amount invested in the actual production of crude rubber is comparatively negligible. The vast rubber manufacturing industry of the United States is almost entirely dependent on supplies from foreign producers. That this state of affairs will not long continue is shown by an increasing interest in planting, and certain representative rubber men have not been slow to seize the exceptional opportunities granted by Sumatra for their capital and energy.

Few great American enterprises in foreign lands have so much interest for American citizens as the big rubber plantation

EARLY DEVELOPMENTS.

The Sumatra plantations of the United States Rubber Plantations, Inc., first came into existence in 1910 under the name of the Holland-American Plantation Co., a subsidiary of the General Rubber Co. of New York, which is also a subsidiary of the United States Rubber Co.

After a thorough investigation by well-known plantation experts of the possibilities of successfully growing rubber in the Far East, it was decided that the northeastern shore of Sumatra, a Dutch island, offered by far the most favorable conditions.

In May, 1910, the Soengei Sikassin estate was bought and subsequently ten other contiguous estates were acquired until the company owned in one piece of irregular shape a tract



THE NATIVE PATIENTS ARE PROVIDED WITH EVERY COMFORT AND EXPERT MEDICAL ATTENTION, HERETOFORE UNKNOWN IN ORIENTAL HOSPITALS.



THIS IS ONE OF MANY WEEDING GANGS, COMPOSED OF MEN AND WOMEN EMPLOYED ON THE PLANTATIONS, FOR WEEDING YOUNG TREES.

of the United States Rubber Plantations, Inc., in Sumatra. Far away on the other side of the world, in the midst of Oriental conditions, lies this great rubber-growing tract, a project developed by Yankee genius and Yankee capital.

comprising 81,000 acres, or some 133 square miles, measuring 30 miles across its greatest length and 20 miles across its greatest width. This tract is only 17 miles inland from the port of Tandjong Balei Bale and 105 miles south of the city of Medan,

a place of 27,000 inhabitants. From the outset it had also the advantage that much of it had already been cleared and well drained for tobacco growing and that more than 175 miles of good roads had been built.

THE BEGINNING OF PLANTING.

Planting was begun in June, 1910, only a month after the initial purchase, and the speed with which it was pushed may be inferred from the fact that by the end of the year 15,000 acres had been planted with growing trees. By the end of 1913 about 34,000 acres, or over 53 square miles, had been planted with *Hevea brasiliensis*. The trees were planted nineteen feet apart each way, 121 trees to the acre, with the view of bringing 100 trees per acre into bearing.



THE FACTORY OFFICES ARE HOUSED IN A BUILDING OF MODERN CONSTRUCTION.

The company also acquired two detached estates, one at Langkat and the other at Si Pare Pare. These were handled as separate estates. Their area is approximately 7,000 acres, about 5,000 acres of which are now bearing.

The plantation managers assured the directors of the home company that they would have rubber from their own plantation in five years' time, but the growth was so rapid and healthy that rubber was obtained from newly-planted trees in less than four years.

Notwithstanding its size, the plantation is one of the cleanest and best kept in the East, the managers believing that the heavy initial expense of pulling out stumps and roots and thoroughly clearing up the ground, though large, is warranted by the ulti-



THERE ARE SIXTY-FIVE MILES OF RAILROAD ON THE PLANTATION.

mate result. About 20,000 coolies, representing a half-dozen contiguous nationalities, are employed on the plantations.

EMPLOYEES' WELFARE CONSIDERED.

The company gives careful attention to the welfare of its employees. It finds its chief difficulty in work along welfare

lines in the well-known hostility of the Asiatic to anything that is new. But step by step the company is making progress in this phase of its work. Especial efforts are made to give the various nationalities represented the sort of diet and home surroundings to which each is accustomed.

If the coolies are so well taken care of, it may be realized that the numerous European staff is excellently provided for



THESE BUILDINGS ARE PART OF THE FACTORY WHERE THE LATEX IS CONVERTED INTO CRUDE RUBBER.

Indeed, the estate is dotted with the tastefully built and decorated dwellings of directors, managers, assistants, chemists, and botanists. Drainage is properly looked after and a filter supplies the necessary pure water for drinking purposes.

As the plantation is rather removed from centers of amusement, the tedium which would otherwise characterize the leisure hours of the staff is relieved by ample means of diversion, there being football fields and tennis courts, a club and a motion-picture theatre.

A MODERN HOSPITAL.

One of the features of the plantation company's efforts on behalf of its employes that has attracted wide attention all through southern Asia is a large hospital which is regarded as the best



THESE FIVE-YEAR-OLD TREES HAVE ALREADY BEEN TAPPED AND WILL CONTINUE TO PRODUCE INCREASING QUANTITIES OF LATEX.

in the Asiatic tropics. The Dutch Government has shown its appreciation of this by conferring a medal on the company.

The hospital is equipped to take care of 800 patients, and is situated on the road from Kisaran to Tanah Radja on a site giving good drainage. Adjoining the hospital twenty-two acres have been reserved on which are situated the quarters of the head doctor and the hospital staff, as well as a hospital for Europeans. The buildings are of brick plastered with cement, while the floors are of concrete, cleanliness and ventilation being carefully provided for. The wards number thirteen, and every room has sufficient space for fifty sleeping tables. Each table

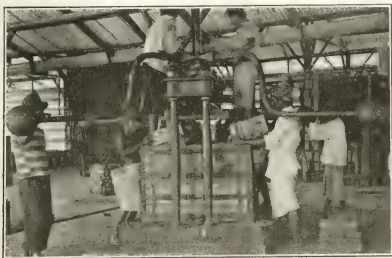
consists of a white lacquered iron frame, on top of which are white lacquered planks. To each table belong a mat, a head-cushion and a blanket. Mosquito-proof wards are provided for malaria patients and special wards are set apart for the treatment of anemia and beri-beri. Filtered water is furnished from a near-by well under pressure. Food in the hospital is prepared for the Chinamen by Chinese cooks and for the Mohamedans by Javanese. The staff includes both European and native surgeons and chemists.

THE WORLD'S LARGEST RUBBER ESTATE.

At the present time the company owns property in Sumatra aggregating about 90,000 acres, of which 45,000 acres, or approximately 70 square miles, are fully planted. This constitutes the largest group of rubber estates in the world. Perhaps the New Yorker will obtain a clearer conception of its size by the statement that the planting acreage is over three times the size of Manhattan Island. If its more than five million trees were planted in a row nineteen feet apart—the distance between each tree on the plantation—they would extend over 19,000 miles, or more than three-quarters the distance around the world.

PRODUCTION STEADILY INCREASING.

During 1914 the first shipment of rubber from the company's own plantations was received in America, and while the quantity



HERE THE RUBBER IS BEING ROLLED AND Baled FOR SHIPMENT TO THE HOME FACTORIES.

that year and also in 1915 was relatively small as compared with the requirements of the United States Rubber Co., the amount received in the ensuing period has steadily increased. About eighty-five per cent of the trees on the plantations are now in bearing, and with many young trees arriving at the bearing age and all the trees increasing in yield with their increasing girth, the plantations will produce more and more rubber each year.

A VALUABLE ASSET.

Due to the efficiency of the Dutch planting organizations and the able staff of the company, the yearly development program has been carried out practically without interruption. Extensions to the planted area are contemplated at an early date, and the outlook for the future is regarded as promising. Already the plantations are proving to be one of the most valuable assets of the United States Rubber Co.

RUBBER CEMENTS. ACID PROOF.

RUBBER cements may have varied composition. If equal parts of fresh unvulcanized rubber and oil are used the mass is so stiff that it could probably be used alone. If as much as four parts of linseed are used considerable filler can be incor-

porated and make a workable putty. Equal weights of rubber and boiled oil are taken; the rubber is first dissolved in carbon disulphide in the proportion of 4 cc. of carbon disulphide to 1 gr. of finely cut rubber. Boiled linseed oil is then mixed in, and if the oil is warm the mixing is facilitated. The solvent is generally not removed by evaporation until the paste is applied.

Another formula differs in having four times as much boiled linseed oil and then fire clay or other filler, such as siliceous, is used.

	Parts of Weight.
Crude, finely cut rubber.....	1
Linseed oil, boiled.....	4
Fire clay.....	6

MARINE GLUE.

Standard preparation of this class of cements, which are applied to crevices, hot, and get firm but not brittle when cold, is composed as follows:

	Parts of Weight.
Crude rubber.....	1
Shellac.....	2
Pitch.....	3

The rubber is first dissolved in carbon disulphide or turpentine before mixing with the heated (not superheated) mixture of the other two. The advent of blown petroleum residuums has made it possible to make up hard but flexible compounds without rubber. Grahamite is a good base to which fluxes, such as these just mentioned or soft asphalts, are added.

GASKET COMPOSITIONS.

In the laboratory one can generally make out for low temperatures and pressures by saturating heavy "kraft" wrapping paper with soft pitch, such as wood pitch for steam or with gelatine and glue (hectograph) composition for oils. For high pressures, slots filled with lead rings and a V-shaped rim to the lid are most satisfactory.

MACHINISTS' CEMENTS.

A few words might be said here with reference to machinists' cements. These are the well-known red and white leads. The red lead is often diluted with an equal bulk of silica or other inert substance so as to make it less powdery on drying. The best way to accomplish this is to add rubber or gutta percha to the oil as follows:

	Parts of Weight.
Linseed oil.....	6
Rubber or gutta-percha.....	1

The rubber or gutta percha is dissolved in sufficient carbon disulphide to give it the consistency of molasses, mixed with the oil, and left exposed to the air for about 24 hours. The red lead is then mixed to a putty. Oxide of iron makes less brittle cements than red lead.

LEATHER CEMENTS.

The following formulas are given in the "Papier Zeitung": (1) equal parts of good hide-glue and American isinglass, softened in water for 10 hours and then boiled with pure tannin until the whole mass is sticky. The surface of the joint should be roughened and the cement applied hot. (2) One kilo of finely shredded gutta percha digested over a water-bath with 10 kilos of benzol, until dissolved, and 12 kilos of linseed-oil varnish stirred in. (3) Seven and one-half kilos of finely shredded india rubber are completely dissolved in 10 kilos of carbon disulphide by treating while hot, 1 kilo of shellac and 1 kilo of turpentine are added, and the hot solution heated until the two latter ingredients are also dissolved. Precautions against fire and vapors should be observed. (4) Another one noticed in the "Journal of the Society of Chemical Industry": gutta percha, 8 ounces; pitch, 1 ounce; shellac, 1 ounce; olive oil, 1 ounce. These are melted together.

SOUVENIRS.

The Pioneer Asphalt Co., Lawrenceville, Illinois, is presenting its customers with a novel "Redipoint" pencil.

A useful desk souvenir from the Rolle Rubber Co., of New York and Chicago, is a permanent stone blotter.

¹From a paper read by S. S. Sadtler at a meeting of the American Institute of Chemical Engineering.

Prices of Rubber Products.

From "Prices of Rubber and Rubber Products," War Industries Board, Press Bulletin No. 30, Prepared by Isador Lubin, Special Expert, Price Section, War Trade Board.

RUBBER PRODUCTS.

THERE APPEARS TO BE NO LIMIT to the variety of products in the manufacture of which rubber is employed, and it is said that one of the large rubber concerns in this country manufactures nearly 30,000 different articles. Rubber goods vary from conveyor belts to the finest elastic bands; all of which, however, can be grouped in nine important categories.

The following is a classification of the important rubber products in the order of their importance as determined by the amount of crude rubber consumed in their manufacture.

TABLE I.—CRUDE AND RECLAIMED RUBBER CONSUMED IN THE UNITED STATES IN THE PRODUCTION OF RUBBER GOODS, 1917.¹

Class.	Crude rubber consumed.	Per cent of total consumed.	Reclaimed rubber consumed.	Per cent of total consumed.
Automobile tires and tubes, long tons	110,270	70.0	21,006	23.5
Mechanical rubber goods	11,323	14.0	13,633	38.0
Boots and shoes	12,688	8.0	15,778	18.0
Druggists' and stationers' sundries	3,732	2.0	176	.2
Insulated wires and insulating compounds	2,756	1.7	8,470	9.5
Waterproof clothing and cloth	2,176	1.3	5,667	6.3
Rubber cement	1,462	1.0	9	0.0
Hard rubber goods	1,166	1.0	2,163	2.0
Miscellaneous	1,798	1.0	2,266	2.5
Total	157,371	100.0	89,168	100.0

DEVELOPMENT IN THE UNITED STATES.

The United States has always led the world in the manufacture of rubber goods, the industry having had its inception here. The output is approximately seven times as large as that of the next manufacturing nation, and its growth is shown by the fact that in 1906 we consumed 24,113 tons of crude rubber, as against 13,838 tons consumed by Great Britain, the next largest consumer; in 1917 our consumption had reached 157,369 tons, as compared with 25,983 tons consumed by Great Britain. This was an increased consumption for the United States of approximately 130,000 tons, or about 600 per cent. The consumption of Great Britain increased by 12,145 tons, or about 100 per cent in the same period.²

It is evident from Table I that rubber tires and tubes are the most important products of the industry, having taken over 70 per cent of the total crude rubber consumption in 1917. In 1914 the United States produced 8,021,371 pneumatic tires, while in 1917 the output amounted to 25,835,573 tires.³

Commensurate with the growth of automobile tire production has been that of other rubber products. In 1917 the total value of the rubber goods output in the United States had reached \$896,000,000, as contrasted with \$301,000,000 in 1914.

FINISHED RUBBER GOODS.

The great number of products turned out by the rubber industry and the limited space available makes impossible as comprehensive an analysis of price fluctuations as would otherwise be desirable. An attempt was made to select representative commodities which would fairly portray the price situation in the various branches of the industry, and for this purpose the method of classification adopted by the War Service Committee of the Rubber Industry of the United States for determining the amount of crude rubber which went into the various forms of rubber goods was used. As shown in Table I, this classification consists of nine sections.

Because of difficulties experienced in securing price quotations, however, it was found necessary to omit certain classes of goods. The most important of these was insulated wire. It appeared impossible to separate the price of insulating materials from that of the finished insulated wire, so that quotations for this class would have little worth in showing price fluctuations. The classes of products included are as follows:

1. Tires and tubes.
2. Mechanical rubber goods.
3. Boots and shoes.
4. Druggists' sundries.
5. Waterproof clothing.

Reference to Table I will show that the branches of the industry producing these goods took 94.3 per cent of the total rubber consumption of the United States in 1917, and it is believed that together they are fully representative of the total rubber product output of the country.

TIRES AND TUBES.

This type of rubber goods has been divided into 3 groups: (1) automobile pneumatic tires, (2) solid tires, and (3) automobile pneumatic tubes. Since approximately 50 per cent of the automobiles in the United States in 1917 were Fords, it is reasonable to conclude that about one-half of the pneumatic tires manufactured in that year were of the size used on such cars. Therefore 30 by 3½ inch tires, together with the 33 by 4 inch size, which is another variety commonly used, were selected as the types for which prices are quoted. Corresponding sizes were taken as most representative for automobile tubes.

As regards solid tires, which have played an ever-increasing part in the rubber industry, the 36 by 5 inch type which was used in considerable quantities by the United States Motor Transport Corps was selected as representative.

MECHANICAL RUBBER GOODS.

A number of commodities are included in this general category, namely: belting, hose, packing, tubing, lining, tape, and innumerable other rubber goods. The most important are belting and hose, and their price fluctuations have been used to characterize the situation in the mechanical goods section.

BOOTS AND SHOES.

For this branch of the industry, two samples have been selected: (1) rubber boots, and (2) arctics. The types taken as representative are of relatively standard variety and form an important part of the sales of a large producer of boots and shoes.

DRUGGISTS' SUNDRIES.

Hot-water bottles and ice bags may be considered the most typical of the products of the manufacturers of druggists' sundries. Two types of hot-water bottles which have an extensive sale were used in quoting prices for this class of goods, while in the case of ice bags there were selected three styles which were sold in large quantities by two important manufacturers.

RUBBER CLOTHING.

Rubber clothing, according to The Rubber Association of America, may be divided into two distinct classes: (1) calendar rubber clothing, (2) double and single texture raincoats.

¹ These data were secured by The Rubber Association of America through a questionnaire sent to 503 consumers of rubber, 448 of whom replied.

² Memorandum on the Rubber Industry.

³ The growth of the rubber tire industry is well reflected in the patents issued by the United States Patent Office. Fully one-half of the American patents issued in 1916 relating to rubber apply to rubber tires, tread, tire-building, tire-repair machines, rims, etc.



FIG. 1.—U. S. Consumption, Rubber, 1917.

Price quotations were secured for five representative varieties of the former class and for four of the latter. In the calendar rubber clothing class the following have been included¹:

1. Sheetting (dull finished).
2. Double-coated fire coats.
3. Jeans (dull finished).
4. Single-texture westerns.
5. Double-texture cowboys.

Under double and single texture clothing have been chosen:

1. Bombazine raincoats.*
2. Cashmere raincoats.*
3. Woolen raincoats.*
4. Women's raincoats.*

METHODS OF MAKING CHARTS.

In order to determine the relation between crude rubber prices and those of rubber products, and in order to define further the bearing of the price situation in the rubber industry as a whole on that in other industries, a uniform method of averaging price fluctuations was resorted to, and the method used in all the bulletins of the present series was applied to rubber.

After selecting representative articles to typify the various classes of crude rubber and rubber products, monthly quotations were secured from trade journals and from members of the trade for the period 1913 to 1918. (See Tables III and V.) Prices of the more important grades of crude rubber, as well as of the more important rubber goods, were then individually averaged on the basis of their pre-war level and charted. Since the inquiry centers about the effect of the war upon prices, the charts were made to show the movement of prices away from the pre-war level. This effect was produced by treating the average of the actual prices for the twelve months preceding the outbreak of the war (July, 1913, to June, 1914) as equal to 100, and reducing the actual prices for each month from January, 1913, to December, 1918, to the form of relative prices on that scale. Thus, for example, if the selling price of a given unit of a product averaged \$2 in the year ending June 30, 1914, and fell to \$1.80 in 1915, the relative price of that product for that month would be 90; if the price rose to \$4 in June, 1918, the relative price would be 200.

The numerous price charts scattered throughout this bulletin, as well as through the other studies of the series, were drawn

*Double-texture. *Single-texture print.

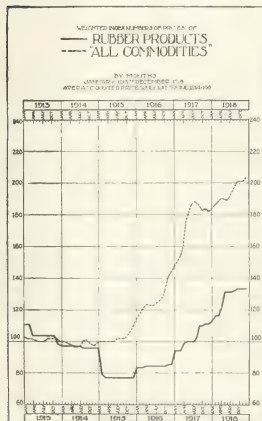


FIGURE 2. WEIGHTED INDEX NUMBERS OF PRICES OF RUBBER PRODUCTS AND "ALL COMMODITIES"—BY MONTHS, JANUARY, 1913, TO DECEMBER, 1918. (AVERAGE QUOTED PRICES, JULY, 1913, TO JUNE, 1914=100.)

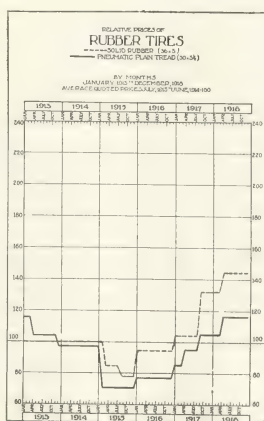


FIGURE 3. RELATIVE PRICES OF RUBBER TIRES: SOLID RUBBER (36 BY 5 1/2); PNEUMATIC PLAIN TREAD (30 BY 3 1/2).—BY MONTHS, JANUARY, 1913, TO DECEMBER, 1918. (AVERAGE QUOTED PRICES, JULY, 1913, TO JUNE, 1914=100.)

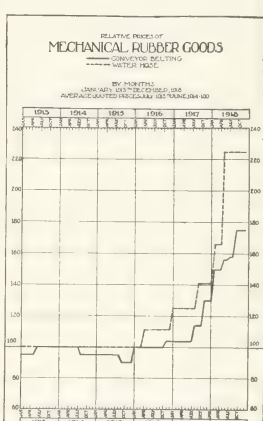


FIGURE 4. RELATIVE PRICES OF MECHANICAL RUBBER GOODS: CONVEYOR BELTING; WATER HOSE.—BY MONTHS, JANUARY, 1913, TO DECEMBER, 1918. (AVERAGE QUOTED PRICES, JULY, 1913, TO JUNE, 1914=100.)

on this uniform scale,² and under this arrangement all the relative price charts in the present series of price histories are comparable with one another.

For those who are interested not merely in the fluctuations of particular commodities such as rubber tires or rubber clothing, but also in the price fluctuations of the class of rubber products as a whole, "index numbers" are provided. A simple average of commodities sold—some by the dozen, some by single units, and some by the foot, as is the case with hot-water bottles, rubber tires, and rubber hose, respectively—would obviously be of little value. Therefore in making index numbers, each individual commodity is "weighted" by multiplying the monthly prices from 1913 to 1918 by the amount of the commodity produced in the United States in the year 1917, plus imports. In the case of crude rubber, since there is virtually no domestic production, the imports for 1917 are used as the weighting factor. The year 1917 was selected as the weighting year so that war-time conditions could be reflected. Figures for 1918 may have been more typical of the war situation, but such data were not available for many commodities when the studies were being written.

TABLE II.—IMPORTS OF CRUDE RUBBER INTO THE UNITED STATES, 1913 TO 1918.³

	1913.	1914.	1915.	1916.	1917.	1918.
Plantations long tons	23,967	35,326	61,085	85,287	134,946	133,167
Paras ⁴	18,481	19,466	32,017	22,490	25,225	20,081
Africans	(*)	(*)	(*)	(*)	3,300	730
Centrals	(*)	(*)	(*)	(*)	898	762
Gumyule	2,756	850	2,654	435	1,863	1,329
Manihoba and Mafra	(*)	(*)	(*)	(*)	800	146
Grassos	(*)	(*)	(*)	(*)	800	146
All other	6,276	5,084	7,068	6,831	.....	.....
Total	51,480	60,726	102,824	115,043	167,062	156,215

³ These samples of rubber clothing are designated by their respective trade names and have been selected with the aid of The Rubber Association of America.

⁴ The one exception to this statement is the case of dyesuffs, where the extraordinary rise in prices necessitated a change in scale.

⁵ Since the amount of crude rubber re-exported from the United States is practically negligible, the figures presented in the above table may be taken as analogous to our rubber consumption. Data from THE INDIA RUBBER WORLD, 1917.

⁶ Caucho has been included in Parás.

⁷ Included in "all other" from 1913 to 1916.

A review of the successive steps taken in making these index numbers will illustrate the process. In dealing with crude rubber, for example, the amount of each individual type imported into the United States in 1917 was first determined, and this amount was adopted as the weighting factor. (See Table II.) Secondly, the price of each type in every month of the six-year period covered was multiplied by this weight. Thirdly, the products of the prices of the nine different types of rubber, times their respective weights, were added up separately for each month; and, finally, these monthly aggregates were turned into relatives on the pre-war base; that is, the average of the aggregates for the 12 months, July, 1913, to June, 1914, was made equal to 100, and all the other individual monthly aggregates converted into relatives on that scale.

The method adopted in weighting rubber products was somewhat different. In this instance, because of the lack of information regarding the amount of the various classes of goods produced, it was found necessary to give to the individual classes a weight which was proportionate to their importance in the entire rubber industry. The amount of rubber consumed in the manufacture of the various types of goods was here used as the determining factor (see Table I), and the number of tons of rubber which went into the production of each class was used as the weight for that class.

It is apparent that index numbers made on this plan for the entire rubber industry are comparable with the relative prices for individual commodities as shown in the various charts. By using these index numbers the reader can get a clear idea of average price fluctuations in the rubber industry as a whole and can have at the same time a basis for comparing such fluctuations with those in other industries.

RUBBER PRODUCT PRICES.

To understand fully the course of the prices of rubber goods during the war period, it is necessary to review briefly the status of the rubber industry in the years prior to 1913. The first two years of the present decade saw the plantation industry still in its infancy, and in 1911 the amount of rubber taken by the five leading rubber-consuming countries surpassed the world's total production. A similar situation, in a less marked degree,

existed in 1912, and two-dollar rubber was not uncommon. Talk of synthetic rubber and the future sources of supply was rife in the trade and 1913 opened with rubber prices around one dollar and rubber products still reflecting the high level of the previous year. It should, therefore, be borne in mind that the base year (July, 1913, to June, 1914) was one of high prices for the rubber industry and that these high prices were the result of crude rubber costs. Later, the situation changed, and in 1917 and 1918, after a period of relative sluggishness, the price of rubber goods rose to a point above the pre-war level. This time the high cost of cotton fabrics and other ingredients was the controlling factor; indeed crude rubber prices in these years were considerably below their pre-war level.

Rubber products did not feel the effects of the speculative price rises experienced by crude rubber at various intervals during the six years here considered. Unlike crude rubber, the prices of finished products continued along a more or less level path, broken at relatively few points, tending downward throughout the first half of the period and upward during the second. It will be noted, on the one hand, that the rise in the price level of rubber goods began almost simultaneously with that of all commodities (see Figure 2), while on the other hand it lagged almost a year behind the rise in the level of ingredients, such as cotton and chemicals.

Rubber goods in general, however, never reached the high level of either their ingredients or commodities in general, the low price of crude rubber having exercised a tempering effect. Thus the rubber-product price level had by the latter half of 1918 advanced but 57 per cent above its lowest point in the past five years, while prices of the ingredients rose by 164 per cent. The index for "all commodities" had jumped 110 per cent in the meantime.

Few industries, on the other hand, experienced anything equal to the price slump of rubber commodities in 1915. In that year practically all rubber goods underwent a price decrease, and the average level for rubber products fell approximately 20 per cent. This situation may be explained by the fact that crude rubber was relatively cheap at the time, while the glut of the cotton market had sent the price of that commodity to a low

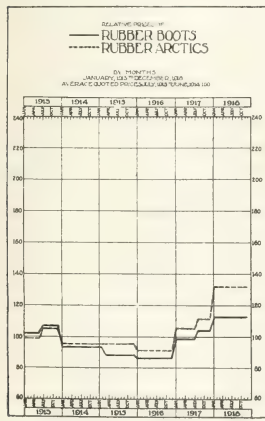


FIGURE 5. RELATIVE PRICES OF RUBBER BOOTS AND RUBBER ARTICLES. BY MONTHS, JANUARY, 1913, TO DECEMBER, 1918. (AVERAGE QUOTED PRICES, JULY, 1913, TO JUNE, 1914=100.)

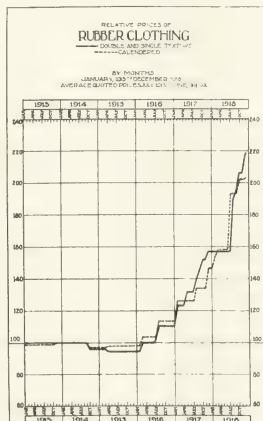


FIGURE 6. RELATIVE PRICES OF RUBBER CLOTHING: DOUBLE AND SINGLE TEXTURE; CALENDAR. BY MONTHS, JANUARY, 1913, TO DECEMBER, 1918. (AVERAGE QUOTED PRICES, JULY, 1913, TO JUNE, 1914=100.)

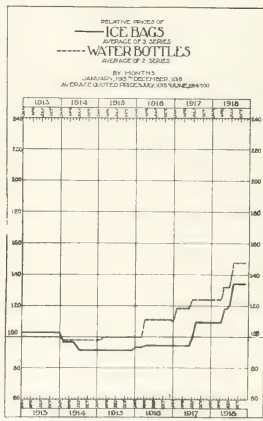


FIGURE 7. RELATIVE PRICES OF: ICE BAGS, AVERAGE OF 3 SERIES; WATER BOTTLES, AVERAGE OF 2 SERIES.—BY MONTHS, JANUARY, 1913, TO DECEMBER, 1918. (AVERAGE QUOTED PRICES, JULY, 1913, TO JUNE, 1914=100.)

point. Another reason assigned by some members of the trade was the growing competition in the rubber industry and the desire of the large manufacturers to crowd out the new arrivals.*

An analysis of the price fluctuations in the individual branches of the industry will bring out in further detail the factors bearing on the price situation.

RUBBER TIRES.

The general low-price level of rubber goods in early 1915 was characteristic of every product of the industry. In the case of tires, however, the price fall was most marked, a 27 per cent decrease taking place within the first quarter of the year. This may be accounted for by (1) the abnormally low prices of cotton fabrics—the aftermath of the shutting off of cotton exportations—and (2) the abnormal competition in the rubber industry, the results of which were at that time making themselves felt. This competition was the culmination of the situation in the three preceding years. In 1912, when prices were highest, there was talk in the trade of the prodigious profits of the tire manufacturers. This talk naturally resulted in a rush to make tires, and soon capacity of production outran capacity of consumption. An inevitable scaling of prices followed, and pneumatic times continued downward until the low point was reached in early 1915. The low price of February continued until December, when the price started on an upward course, which reached its summit in April, 1918. This rise was, of course, due to the increasing cost of labor and materials other than rubber. In no case, however, was the rise proportionate to either of these factors.

Solid rubber tires are a relatively new product of the rubber industry. In 1913 and 1914 they were relatively little in demand and it was not until the motorization of the Allied transport system after the outbreak of the European War that they became a factor of large importance. Solid-tire prices continued unchanged through 1913 and 1914, falling early in 1915 in sympathy with all other rubber goods. In late 1915 the war demand for solid tires made itself felt. This demand tended to reinforce the rise of tire prices in general, and January, 1916, witnessed an increase of 16 per cent, as contrasted with a 7 per cent rise in the price of pneumatics. (See Figure 3.)

In 1917 and 1918 solid-tire prices rose quite regularly with those of pneumatics. The tremendous demand resulting from Army needs accentuated the rise in the price of the former, however, and 1918 ended with solid-tire prices 45 per cent above their pre-war average, as contrasted with pneumatics, whose prices had risen but 16 per cent above the 1913-1914 level.

MECHANICAL RUBBER GOODS.

It was in this branch of the rubber industry that price increases were most evident in the six years dealt with in this study. Rubber hose, for example, increased 125 per cent above its pre-war level, while belting reached a level which was 75 per cent above the 1913-1914 average. The rise in the price of hose may be attributed to both the increasing cost of labor and materials—the amount of crude rubber used in the production being relatively small—and the stimulated demand. The Army, the Navy, and the Shipping Board used large amounts of rubber hose, whereas in the case of garden hose civilian consumption also increased appreciably.

Rubber belting is fast becoming a competitor of its leather prototype, and its price rise may be in part attributed to the increasing price of the leather product. The extension of industrial plants in the last two years and the consequent demand for transmission and conveyor belting was another potent factor in price determination.¹⁰

*THE INDIA RUBBER WORLD, March 1, 1915, page 318.

¹⁰It should be noted that although the price increase of mechanical goods was larger than that of the products of any other branch of the rubber industry, yet when compared to prices in general in late 1918, rubber hose was slightly above and rubber belting slightly below the level of "all commodities."

RUBBER FOOTWEAR.

Although rubber boot and shoe prices did not drop to the low level of tire prices, they nevertheless remained considerably below their pre-war average for a longer period than did the latter. This may be attributed in part to the low prices of reclaimed rubber, tremendous quantities of which are used in the footwear branch of the industry. The mild winters of the first half of the six-year period dealt with and the consequent difficulty of disposing of stocks also played an important part in the price situation. Increasing costs added to a demand stimulated by war needs sent the price of rubber footwear upward at the end of 1916. It is notable that only three increases were made in the price of rubber footwear during the period of the war—a situation characteristic of very few important commodities. (See Figure 5.)

RUBBER CLOTHING.

The rise of rubber clothing prices, which was surpassed by only one other rubber commodity herein dealt with, namely, rubber hose, may be attributed almost entirely to the cost of labor and materials. The Army demand for raincoats had its effect, of course, and this factor was especially evident during 1917 and 1918. The relative cost of the rubberization of clothing is of little importance as compared with that of the fabrics and labor employed. Moreover, the cost of rubberization did not increase to any appreciable degree in the past six years. The price of fabrics employed, on the other hand, increased from 12 to 48 per cent, varying with the individual types of coats; while other costs such as labor, trimmings, etc., which comprise the largest part of the expense of production, rose from 47 to 78 per cent.

The following table shows the respective increases in the cost of the nine types of coats, the average relative prices of which are shown in Figure 6.

TABLE IV.—INCREASED COST OF RUBBER CLOTHING, 1913-1918.
Per cent of increase.

	Rubber compound.	Fabric.	Other items. ¹¹
Coat I	13.3	21.0	65.5
Coat II	16.0	22.0	60.0
Coat III	12.5	30.5	57.0
Coat IV	13.0	28.5	59.5
Coat V	10.0	32.5	57.0
Coat VI	6.0	29.0	64.0
Coat VII	6.0	45.0	48.0
Coat VIII	5.0	48.0	47.0
Coat IX	9.0	12.0	78.0
Average	10.1	29.8	59.6

DRUGGISTS' SUNDRIES.

This class of rubber products, like that of rubber footwear, experienced but few price changes prior to 1916. In fact, the price of water bottles, with the exception of a slight drop of two per cent in 1914, remained unchanged until April, 1916, when it started a rise which ended in the middle of 1918. Ice bags, on the other hand, changed but little in value during the period prior to America's entrance into the war, the low price of 1914 having remained relatively static until June, 1917. The demands of the Red Cross and the Medical Department of the Army stimulated prices at this time, bringing a rise which had been a long time due. (See Figure 7.)

CONCLUSION.

A review of the run of prices for the rubber industry as a whole—that is, for crude rubber, ingredients, and rubber products combined—as presented in the Figure 2, makes apparent the fact that with the exception of the 16 months ended January, 1915, the rubber industry price situation had little in common with commodities in general. Low prices characterized the industry by and large. During the six years dealt with in this study there were only 12 months in which the index number of the rubber industry was higher than that of "all commodities,"

¹¹Includes findings, trimmings, waste, packing, labor, overhead, profit and loss. Data from confidential source.

and in all but four of these instances variations above the general price level were less than 10 per cent. In February, 1915, rubber prices fell 16 per cent below the level of all commodities, and from that time on the index numbers of the rubber industry and of commodities in general followed individual courses. The latter, after remaining relatively static for some nine months, ascended rapidly, reaching its first apex in July, 1917, at a point 89 per cent above the level of February, 1915. The governmental policy of price-fixing inaugurated in the summer of 1917 resulted in a slight recession, which continued until June of the following year, when the upward course of prices was resumed. The year 1918 ended with the index number of all commodities 103 per cent above its pre-war level.

The index number of the rubber industry, on the other hand,

followed a rather slow upward course, which was interrupted now and then by cycles of depression varying from 1 to 10 months in duration. At no time did it approach the index number of "all commodities," and throughout the period following February, 1915, the price level of the rubber industry was at least 16 per cent below that of commodities in general. This difference in levels was highest in July, 1917, when the "all-commodities" index number was 80 per cent above that of the rubber industry. Throughout 1917 and 1918, in fact, the divergence existing between the two levels was one of great significance and is to be found in the price fluctuations of but few industries. The signing of the armistice found the price level of the rubber industry 72 per cent below that of all commodities, or, in other words, 31 per cent above its own level of 1913-1914.

Influences Operating on the After-the-War Demand for Rubber Goods.

By L. W. Alwyn-Schmidt.

GR^{EAT} EVENTS of such an elementary force as a world's war must result in an upheaval of all the ordinary standards of life. Progress advances at a higher speed than during normal times and the world experiences the evolution of a century in the comparatively short space of a few years. The period which divides us to-day from the advent of the war is still too short to enable us to realize fully what it has done to hasten industrial and economic progress. As yet we have not had a chance to draw the balance of loss and gain. It certainly has had a powerful influence upon inventors in all countries. As to the rubber industry, it has so far been unable to utilize synthetic rubber, but the field of application for the genuine article has widened materially and the rubber industry emerges from the war as a powerful factor in the economic life of the world.

This development cannot fail to exert a strong influence on our domestic rubber industry in its relation to both home and foreign markets. Considering the enormous strides made by the American rubber industry in the expansion of its foreign influence, it is the effect upon foreign markets which will undoubtedly receive the greatest attention from our manufacturers. The average manufacturer or exporter is inclined to look upon foreign trade as a matter of orders and delivery. The great economic factors operating in the world's markets do not apparently concern him and he does not trouble about the development of favorable trade prospects. This policy has been especially noticeable in our own country. It has marred for a long time our politically and economically desirable trade relations with South America and it is again interfering very seriously in our relationship to our former allies in Europe. It is, however, the comprehensive understanding of the present and future requirements of a market which develops the successful exporter. Only the manufacturer who makes himself useful to his customer can expect to acquire his permanent confidence. It is, therefore, necessary that American rubber manufacturers should be conversant with the economic tendencies underlying the development of markets for American rubber goods.

OUR PAST PROVINCIALISM.

The American rubber industry can easily be called the most powerful and progressive of the rubber industries of the world. No country has provided during peace times so many difficult problems for the rubber chemist and engineer than our own and it is only our somewhat provincial habits which have prevented the American rubber industry from taking first place as an exporting industry in the years before the war. Matters have now changed. We have been forced to take a hand in international

affairs and the rubber industry was burdened with an unusual load of foreign orders which cost a great deal of exertion to fill. In the future we shall receive automatically a share of the export business of the world and this will be measured more or less by the general ability of our industry to supply the demand. This share in foreign trade flows as a natural result of international trade exchange to any leading industry of any country. It is the tribute due to the existence of a powerful economic producer. The successful exporter, however, cannot wait to let others determine his share of the business of the world, and by making use of the existing opportunities obtains a larger proportion of the trade. And such opportunities are now especially numerous. They have arisen as the result of the war.

RUBBER IN DRY COURSING.

It is not always easy to recognize favorable market developments in their early stages. Often we cannot determine with certainty what particular consequences will follow a certain event. But there are at present many so-called fundamental economic causes which must lead to an extensive business for the rubber industry of the world. Only a few can be mentioned in the space of a short article. There is a considerable shortage of houses in England, and in fact, all over the world. It is estimated that England will have to build 500,000 dwellings within a few years. France may require even more. And we can estimate conservatively that several million houses will be erected all over Europe in the near future. All these houses require dry coursing and waterproof roofing. This question of dry coursing is still in its initial stages. In England slate is frequently used for the purpose. But the old houses in Europe were often entirely without dry courses, resulting in damage to the masonry caused by the infiltration of water. Shortly before the war a proposition was made to use rubber for this purpose. The advantages of rubber sheets laid along the fundaments were obvious. Rubber is absolutely damp proof, it would stretch in case the fundaments settled and will not break like slate, and, moreover, the cost was not materially higher. The building of a large number of houses offers the rubber industry an opportunity to manufacture dry course material. Large strips of rubber, 1 to 2 feet wide and $\frac{1}{2}$ or $\frac{3}{4}$ -inch in thickness, are required. Figuring at the basis of 30 yards of material for each house, the very small English workman dwelling being considered, the English consumption of that kind of dry course sheeting would amount to 15 million yards alone, not to speak of the large demand which might be developed on the European continent. Some advertising would be of course required to acquaint the build-

ers with the material and also to educate the public to demand its use in the new buildings.

FIBER SOLES IN EUROPE.

In the early stages of the war, to give another example, the writer had a hurry call from Switzerland for American composition soles made from rubber or any other material. A similar call came from Rumania a few weeks later. In both instances the fact was communicated to a number of American rubber firms likely to handle a large development of this kind, but only one firm made use of this opportunity. Before the war it was difficult to convince the European public of the usefulness of rubber heels and soles, or any other waterproof leather substitutes. The few firms which imported these goods in Europe did not do a very large business because European opinion was generally adverse to the use of anything but leather in footwear. Leather has become exceedingly rare in Europe and shoe prices have mounted to figures which would be incomprehensible even in our own country. Composition materials have been introduced quite generally and great numbers of the European population have reconciled themselves to wearing them. We have made great progress in this country during the last few years in the production of rubber soles and heels and our manufacturers might find it well worth their while to study the European situation for the purpose of making a profitable use of its opportunities.

AMERICAN TIRES FOR EUROPE.

As a third example the automobile industry may serve. This industry, though highly developed in Europe, is comparatively a small factor in the American market. It is reported that the European automobile industry will start building small passenger and carrier automobiles on American lines, adopting, if possible, the design of American rims and tires. The outcome will be a greater demand for small American tires, not only in Europe but in other parts of the world where European automobiles will be sold.

All three tendencies, and there are many more to be found under the cover of the present industrial reorganization, have not come about spontaneously. They are rather the result of a slow evolution of earlier causes. The war, however, has hastened the development and has made a necessity out of what was five years ago only a convenience. It has cost the makers of rubber heels and soles thousands of dollars to make the public acquainted with the advantages of wearing rubber heels and the educational campaign is still going on in this country. In Europe, the war has acted as an educator in this respect and Europe is now ready to accept the leather substitutes made of rubber or any other material. The same refers to building material and automobile tires.

FOREIGN OPPORTUNITIES IN RUBBER.

But the evolution now taking place in favor of employing rubber is not confined only to building materials, wearing apparel and automobiles. It is prevalent in medical and surgical appliances, the electrical industry, plumbing, steam and industrial engineering, and the large circle of domestic industries where the guiding hand of the rubber manufacturer is required to make a fact out of what at the present time may only be a tendency. There is hardly a rubber manufacturer in this country who has not been asked during the last five years whether a certain article might be made with advantage from rubber. Many of these inquiries have been turned down, not because they were unsuitable but because the factories were too busy to consider them. In many instances the desired articles have been manufactured, but their use has not extended beyond their particular field. Now is the time to follow up these leads; the inquirer should again be approached and his particular requirements investigated. The work will fall principally to rubber manufacturers specializing in certain articles or to the special departments of large enterprises. This will be an advantage

as the investigation will be conducted by men competent to give the new proposition its best chance for a complete success.

As to the foreign side of this evolution in the demand for rubber goods our industry will find plenty of material. The need of the foreign consumer for the employment of new materials is very great. No doubt much of the business which would have fallen to our manufacturers if they had taken hold of these suggestions early during the war, will now flow in the direction of foreign rubber manufacturers who are just as keen to take hold of any new development, but a good deal should still be left to pay for the trouble of making the necessary experiments. It is not as a rule very difficult to perfect a technical process or an implement of some sort if once its usefulness has been established. But it requires much astuteness to introduce its use generally and thereby make the article worth its industrial production.

The influence of this present development on our foreign trade will soon show. We should witness a rapid growth in the demand for many articles new to the industry and those which have been in less demand in former years. Upon the ability of our industry to forestall this development and to direct it in channels favorable to our own manufacturers, the future success of the American rubber industry in new markets will depend.

THE MILEAGE GUARANTIES INCREASE.

Following the recent reduction of pneumatic tire prices on the part of several leading companies comes a more or less general increase in mileage guarantees and adjustment basis for tires ranging from about 30 to 75 per cent of the previous guarantees. The movement was started by The B. F. Goodrich Co. and its subsidiary, the Diamond Rubber Co., and a canvass of the trade shows to what degree other companies are falling in line:

Make.	Kind.	Former Mileage Guaranty.	Present Mileage Guaranty.
Diamond	fabric	3,500	6,000
Diamond	cord	5,000	8,000
Federal	plyan tread	4,000	6,000
Federal	"Rugged" tread	5,000	7,000
Federal	cord	6,000	8,000
Firestone	fabrics	5,500	6,500
Firestone	cord	.....	8,000
Fisk	"Red Tops"	4,000	7,000
Fisk	cord	.....	8,000
General	"Tumbler"	.....	7,500
General	cord	.....	7,000
Goodrich	labor	3,500	6,000
Goodrich	cord	5,000	8,000
Kaystone	fabric	4,000	6,000
Norwalk	cord	5,000	7,500
Racine	non-skid fabric	5,000	6,000
Racine	cord	7,500	7,000
South Bend	.....	.....	7,000
Stronghold	Ford sizes	.....	7,500
Stronghold	Other sizes	.....	6,000

Several companies have made no change because their mileage basis was already high enough. A few of the larger firms give no mileage guaranty as a basis of adjustment, preferring to adjust claims on poor material or defective workmanship in the individual case. This method, they believe, gives greater satisfaction than setting a fixed scale which is often inapplicable to the case in hand.

About five years ago an unlimited guaranty covering the full life of the tire was adopted for Goodyear passenger-car tires, and that form of guaranty has now been extended to solid and cushion tires. No matter how far a Goodyear tire has been driven, whether it be 5,000 or 50,000 miles, or how long its period of service, a fair and equitable adjustment will be made if it proves defective.

FRAZAR & CO. BUY NEW YORK BUILDING.

Frazar & Co., a firm well known to the rubber trade through its chemical department, which supplies the "States" brand of antimony, zinc oxide, magnesia, etc., has recently purchased the Trinity Court Building at 72-76 Trinity Place. This will be known as the Frazar Building and after extensive alterations will be occupied by Frazar & Co. for their New York offices.

Echoes of The Great War.

RESUMPTION OF TRADE WITH GERMANY.

EFFECTIVE JULY 14, 1919, it was announced by the War Trade Board Section of the Department of State that a general enemy trade license had been issued authorizing all persons in the United States to trade and communicate with persons residing in Germany and to trade and communicate with all persons with whom trade and communication is prohibited by the Trading with the Enemy Act, except those in Hungary or that portion of Russia under the control of the Bolshevik authorities.

The above-mentioned general license does not authorize the importation into the United States from Germany or elsewhere of dyes, dyestuffs, potash, drugs or chemicals which have been produced or manufactured in Germany; nor does it authorize trade with respect to any property which heretofore, pursuant to the provisions of the Trading With the Enemy Act as amended, has been reported to the Alien Property Custodian, or should have been so reported to him, or any property which heretofore, pursuant to the provisions of said act, the Alien Property Custodian has seized or has required to be conveyed, transferred, assigned, delivered or paid over to him.

Exports to and imports from Germany may now take place under Special Export License RAC No. 77 and General Import License PBF No. 37.

FEDERAL INCORPORATION OF AMERICAN FOREIGN TRADE FIRMS.

The bill to permit the Federal incorporation of companies engaged in foreign trade that has been introduced in Congress with the approval of the Government, the National Foreign Trade Council, and other organizations, is of much moment to the rubber industry, which necessarily involves international relations to a considerable degree.

Our state incorporation laws vary so greatly and change so frequently, and court procedure and decisions differ to such a degree as to be so generally distrusted abroad, that it is often difficult to secure investment of foreign capital in American companies organized under these laws.

Federal incorporation of American concerns doing business abroad would lend the confidence and prestige of the federal name and authority to our foreign traders, and nothing is as important to foreign trade as mutual confidence.

It is highly desirable that firms abroad made up of Americans, but depending largely upon foreign money for their capital, be permitted to do business under the American flag in such a way as to attract the investment of foreign money. This investment in American concerns would inevitably lead to the purchase of American goods, and would therefore be of the greatest value in aiding the growth of American foreign trade.

COUNCIL OF NATIONAL DEFENSE TO CONTINUE.

The war has shown conclusively the country's need of a governmental agency that shall in time of peace collect, study and centralize in a scientific way all information bearing upon the national defense, particularly with regard to the mobilization of industries, science, and labor in time of war.

The United States Council of National Defense, created nearly a year before America entered the war, is such an agency, and the amount of constructive work it has accomplished with an expenditure of only \$1,574,000 up to May 1, 1919, has been truly remarkable.

Under the Sundry Civil Bill there has been reappropriated to the Council of National Defense its unexpended balance for the fiscal year 1918, and the Council is now maturing plans to return to its peace-time functions. During the war the Council has been in effect an administrative laboratory and clearing

house of study and action in matters touching the national defense. Broadly speaking, it purposes to continue under the same policy.

With the closing of the work of the Capital Issues Committee, the Committee on Public Information, the Food Administration, the Fuel Administration, the War Industries Board, and the War Trade Board, the Council remains the single interdepartmental unit which can centralize the study of the records established by these war agencies. It will undoubtedly become in effect the residuary legatee of these war agencies to the extent that their records are not allocated to the executive departments.

The Council of National Defense is composed of the Secretaries of War, Navy, Interior, Agriculture, Commerce, and Labor. With it throughout the war acted an advisory commission of seven members, composed of Daniel Willard, Samuel Gompers, Bernard M. Baruch, Howard E. Coffin, Julius Rosenwald, Dr. Franklin Martin, and Dr. Hollis Godfrey.

WASTE RECLAMATION IN AKRON, OHIO.

Waste reclamation, a war-time concept, has become a peacetime development that promises eventually to accomplish much good throughout the country by inculcating habits of individual and corporate thrift. The plan was originated by the Commercial Economy Board of the Council of National Defense, but its successful operation is attributable to the activity and interest of George W. Sherman, manager of the salvage department of The B. F. Goodrich Co., Akron, Ohio.

Fostered by 75 per cent of the industrial capitalization of the community, the Akron Industrial Salvage Co., capitalized for \$25,000, was incorporated in May, 1918. It was not a movement for profit but for betterment and the company has operated on the theory that waste material often has a value in use far greater than its value in price, and that nothing of use in industry should be destroyed.

In order to assist other communities in organizing similar companies, the development of a short, intensive training course for salvage executives, to be conducted by one of the local colleges, is contemplated by the Waste Reclamation Council of Akron, and the feasibility of a full-year course of salvage engineering for senior college men is also under consideration.

The waste-saving work is still in its infancy but it is safe to predict that this civic improvement company will make a contribution to the movement for national waste reclamation as fundamental as that of National Waste Products, Limited, in England, a government corporation operated on strictly commercial lines.

BELGIUM GETS BACK HER MACHINERY.

Belgian machinery, stolen by the German invaders, is being returned by them at the rate of some 3,000 tons weekly. The total amount returned on July 1 was 18,000 tons and there is much more to come. The law of righteous retribution is still in existence.

AMERICAN RUBBER COATS IN GERMANY.

Rubber coats were among the first goods offered by American manufacturers to Germany, according to the "Deutsche Allgemeine." This newspaper states that the initial result of the raising of the blockade is the flooding of Cologne with foreign goods, and that America and France were among the first in this trade.

IT IS TO YOUR BEST INTEREST TO PUT YOUR LIBERTY BOND INTEREST in War Savings Stamps.

Tire Rebuilding and Repairing—II'.

TIRE REPAIRING OPERATIONS.

REMOVING THE TREAD.

THE WORN TREAD, breaker strip and cushion stock down to the fabric are completely removed with a sharp knife, and the exposed edges of the side-wall gum are skived or beveled, care being taken to avoid cutting into the fabric. The side walls are allowed to remain intact unless defective, in which case they also must be removed in the same manner, together with the chafing strip. If the tread is so badly cut that it is difficult to skin, a buffing machine equipped with a rotary rasp will be more effective than the knife. The casing is next reversed to expose the inside and carefully examined for weak places. For small inside repairs two tire jacks or "reversers" will hold the beads open while the work is being done and obviate the necessity of reversing the entire casing. All fabric, bead, and side-wall damages are then treated by the usual methods of tire repairing and vulcanizing, quite irrespective of the retreading to follow.



TIRE-BUILDING LASTS OR MANDRELS.

BUFFING.

When the fabric or cord repairs have been completed, all particles of old rubber and dirt are removed from the outside of the casing by means of a buffing machine equipped with a rotary wire brush which also roughens the surface of the fabric. All rubber dust and loose fabric particles are dusted off with a whisk broom or fine hand-brush, when the casing is ready for retreading, unless recovering of one or both side walls is necessary.

RECOVERING.

If the side walls of the casing are damaged to such an extent that a small local repair after the well-known manner is not sufficient, the damaged side wall or walls and corresponding bead or chafing strip will have been removed with the tread, and the casing must first be recovered. Two or three coats of vulcanizing cement are applied to the well-buffed fabric of the carcass as needed, each coat being allowed to dry separately. The bead strip is first replaced with an 8 ounce fabric frictioned two sides, lapping 1 inch on the outside and 1½ inches on the inside. The side walls are next applied, using one ply of black, white, gray, or red unvulcanized gum of proper thickness—usually 1/16 or 3/32-inch—and wide enough so that the tread when put in place will overlap 1 inch. Careful rolling to eliminate all air blisters is essential.

RETREADING.

There are at the present time four principal methods of retreading tires in common use. They are as follows:

1. Building up the tread of unvulcanized rubber, wrapping and curing in a pot heater or kettle vulcanizer. If a ribbed tread is desired, the cure is effected in a retread mold.
2. Using a "camel back" tread gum specially prepared in one piece to proper thickness, and then curing in a kettle.
3. Applying endless semi-cured retread bands with beaded or non-skid tread designs, filling around the raised parts of the tread with soap-stone mortar, or using a negative wrapping pad, wrapping and curing in a kettle vulcanizer.
4. Supplying a new tread by any of the foregoing methods and vulcanizing in sections by three or four cures in a cavity retread mold.



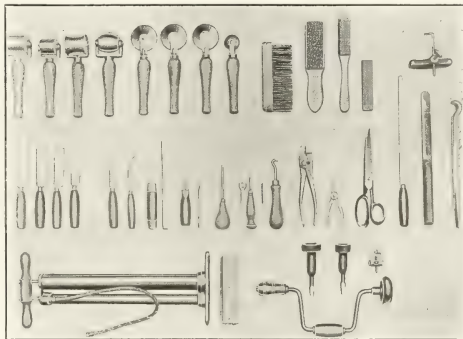
BUFFING THE CASING.

BUILDING UP AND APPLYING THE TREAD.

To the buffed outside surface of the casing two or three coats of vulcanized cement are applied as needed, permitting each to dry thoroughly. From one-half to one hour must be allowed for the first coat or coats and from two to five hours for the last coat. A longer time is required in cold damp weather than in warm dry weather.

Cord tires require not less than three coats of cement, each being allowed to dry separately. The first coat should be a thin solution that will soak into the roughened cords, the second and third coats medium heavy solutions. The first two coats must be allowed to dry at least one hour and the third coat from six to twelve hours. Over night is usually convenient and sufficient.

When the cement is thoroughly dry, a strip of cushion stock, usually 1/64 or 1/32-inch in thickness, and wide enough to cover the cemented surface completely or within an inch on either side, is applied.



TOOLS USED IN TIRE REBUILDING AND REPAIRING.

*Continued from THE INDIA RUBBER WORLD, July 1, 1919, pages 552-553.

Above the cushion stock is laid the breaker strip of coarsely woven fabric frictioned and coated on both sides, and rolled firmly into place with a hand roller. To prevent air pockets, the edges of the breaker strip are bound with half-inch strips of cushion stock rolled down firmly. The breaker strip is of great importance to the tire. It prevents separation of the tread; obviates the formation of mud boils, and reduces the possibilities of fabric breaks resulting from stone bruises.

The tread is next applied. First, however, it must be built up with three or four strips of black, white, gray or red unvulcanized tread gum of suitable width and length sufficient to reach around the entire circumference of the casing. In building up the tread the second widest ply, $\frac{3}{4}$ -inch narrower than the widest ply, is placed at the bottom. Above this are placed the required number of piles, each $\frac{3}{4}$ -inch narrower than the one beneath it, until finally the widest ply is placed at the top. Each ply is rolled down securely as laid with a flat hand-roller and all air blisters removed by pricking with an awl.

In applying the tread to the casing the second widest ply is brought into contact with the breaker strip, the tread is carefully centered all around and pulled tight to prevent wrinkles. It is then rolled down with a hand-roller or a tread-rolling machine, all air blisters being pricked with an awl. The edges of each tread ply are stitched down with a rotary wheel-stitcher, and the splice trimmed off even with the surface of the tread.

"CAMEL BACK" TREAD GUM.

To obviate the necessity of building up treads as needed, there is a specially prepared unvulcanized tread gum called "camel back" because it is built up to a hump in the center where the thickness is needed. This requires only to be cut off to the desired length; waste is thus reduced to the minimum and ply separation, low spots, and air blisters are obviated.

Manufacturers also supply endless retread bands with ribbed and non-skid designs in all standard sizes to be applied instead of built-up or "camel back" treads.

VULCANIZING THE COMPLETE REPAIR.

Plain retreads, retread bands, relines, and rim cuts entirely around are all vulcanized in a pot heater, also known

closed to fit the different diameters. To insure a perfectly smooth surface, a fabric pad should be wound around the coil.

Adjustable cast iron or aluminum segment cores are often used instead of air-bags or coil springs. They are the exact size and shape of the inside of the tire. Each segment is $\frac{1}{2}$ -inch thick at the inside and $\frac{3}{8}$ -inch at the outside, making them conform solid to the circle of the average tire. A sufficient number of these segments is strung on two wires to go nearly around the casing, and the adjustment between the different casings is made by using more or less segments. Where the coil springs gaps apart to conform to the diameter of the casing, these segmental cores lie close together so that the casing can neither shrink nor stretch in curing.

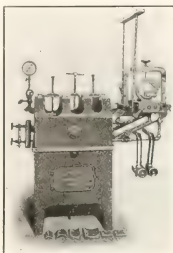
Split curing rims, with clincher or straight-side beads as required, are next put in place upon the casing and the two sides clamped securely together by bolts. A strip of wet muslin cut on 45 degrees bias is stretched around the casing as a surface liner, and over this a heavy wet jacket. In the case of a re-covered tire the light muslin jacket is put on before the curing rims.

The tire is next cross-wrapped with wet strips of 8-ounce fabric 2 $\frac{1}{2}$ inches wide. The wrapping should be even and very tight to insure uniform pressure, particularly on the side walls of the casing, and to help the beads hold correct shape. The wrappings are wound completely around the casing in one direction and then the operation is reversed and the entire casing wrapped in the opposite direction. For convenience in working, these strips of fabric are previously rolled like surgeon's bandage, either by hand or with one of the several rag rollers on the market.

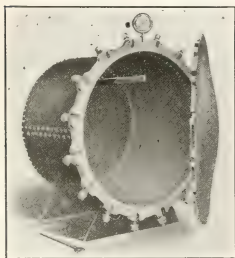
If an air-bag is used instead of coils or segmental cores, it is inflated to 70 pounds pressure, and the casing is finally cured in a kettle vulcanizer. Common cures are 45 minutes at 35 pounds steam pressure, and 40 minutes at 40 pounds.

IN CONCLUSION.

It seems unlikely that the price of tires will soon reach pre-war levels. This, together with the greater spirit of thrift engendered by the war, means that rebuilt tires will be used more



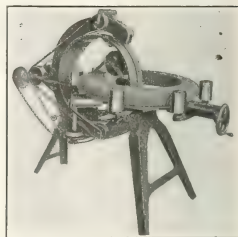
SECTIONAL VULCANIZER.



HORIZONTAL RETREADING VULCANIZER.



KETTLE OR POT VULCANIZER.



WRAPPING MACHINE.

as a kettle vulcanizer, or in a retread mold. In the case of a pot heater a complete air-bag or an endless retreading coil is first placed in the casing. Complete air-bags made of specially treated gum and wound with fabric will give from 100 to 300 cures. Endless retreading coils will last indefinitely. They are made of tempered hard steel flat wire, long enough to accommodate casings of any diameter, and wound so that they may be opened or

and more; that tire rebuilding has become and will continue to be a great and growing business. Some 6,000,000 automobiles are now in use in the United States and the number increases enormously every year. Allowing five tires to each car, four in use and one spare, it is seen that some 30,000,000 tires are now in use. Of these, probably one-third, or 10,000,000, could be rebuilt annually.

HOW NEW YORK AND LONDON CRUDE RUBBER IMPORTS ARE HANDLED.

NEW YORK METHOD.

THE METHOD employed in handling crude rubber imports in New York differs from the London method in that the rubber, if unsold, is handled by the owner or consignee instead of the broker.

When the rubber is discharged from the vessel or cars the owner's dock man samples 10 per cent of each mark. These samples are used to represent the lot as a whole, or the individual marks when sales are being effected, the rubber being stored at one of the numerous warehouses in or near New York.

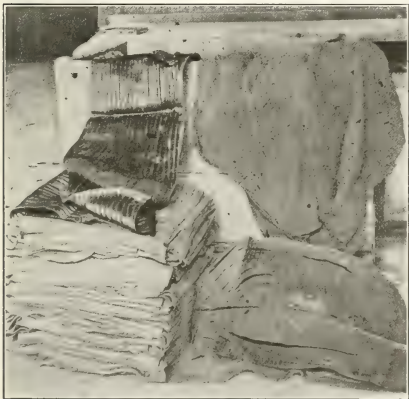
When the rubber has been sold before arrival to manufacturers, the same process of examination and sampling takes place, the rubber being forwarded to the factory direct from the dock.

When sold between importers or dealers it is the usual custom for the buyer's representative to meet the representative of the seller and together make the examination of 10 per cent of each mark. If the buyer is not satisfied with the examination, he can demand a more thorough or full examination, the expense of which beyond the 10 per cent is borne by the buyer. This joint examination and passing the weigher's scales constitutes a good delivery from which there is no appeal.

When rubber is sold "to arrive," but more particularly in the case of the grades other than the standard, it is customary to deposit with the broker, if the sale is made by a broker, all or part of the sample, which the broker seals and holds against possible dispute as to quality.

Should dispute arise an arbitration is held under the rules of the Rubber Trade Association, of New York, the result of which is final, but with right of appeal to be heard by the full Arbitration Committee, from whose decision there is no appeal.

Terms upon which rubber is sold to manufacturers are based



(C) Underwood & Underwood, N. Y.

CRUDE RUBBER SAMPLES.

upon net cash in 10 days from the date of delivery on the dock or ex-warehouse. Terms between importers and dealers are cash less 10 days' interest at 6 per cent per annum.

LONDON METHOD.

Formerly all plantation rubber went to London and in the early days, the planters, or many of them, sent their product to

their London secretary, just as it was produced, all the grades being mixed together. The secretary turned it over to his special broker who had it assorted, classified, and the samples of the different grades displayed in his salesroom where intending buyers could examine them, take the catalog number, and pre-



(C) Underwood & Underwood, N. Y.

WEIGHING CRUDE RUBBER SHIPMENTS AT NEW YORK.

pare for the auction. At the auction each broker personally auctioned off his own lots as his turn came. Private sales were also made before the auction.

At the present time the same method is continued excepting that there are no auctions and it is all done by private tender.

When a consignment of spot rubber reaches the docks, each lot is examined, weighed, and classified according to color, thickness and quality. Samples weighing from one to five pounds are taken by experts, each sample being stamped by public officials. These samples, which represent the average quality of the lots, are placed in bags to be sent to the brokers' sales rooms. Intending purchasers have the right to go to the docks and examine the whole consignment, but as a matter of fact, they never do so, as the samples are absolutely reliable.

Sales are made for cash within fourteen days after the Wednesday following the day of the sale. Buyers, therefore, have their entire purchase in their factories before they make any payment. A considerable portion of the rubber traded in is sold on forward contracts for delivery within 3, 6, or 12 months, so that purchasers can be sure of having their rubber at a fixed price for a certain time ahead. Some of these forward contracts are free on board, the rubber going straight from the grower to the factory; other contracts specify London delivery. In either case, the Standard Qualities Committee of the London Rubber Trade Association is the arbiter in the case of any difference of opinion as to the quality of the shipments.

The London broker, in addition to accomplishing the sales, guarantees the credit of the buyer to whom he sells and actually handles the rubber, with the attendant expense, whereas the New York broker assumes no responsibility after the passing of the contract.

RUBBER DIVISION MEETING OF AMERICAN CHEMICAL SOCIETY.

The autumn meeting of the American Chemical Society will be held at Philadelphia, Pennsylvania, September 3-6, 1919, when the first meeting of the newly organized Rubber Division will also be held. Final arrangements for the program are not yet completed; however, the interest shown promises a very interesting meeting.

Balanced Packing-Box Construction.

THE INVESTIGATIONS of balanced packing-box construction and tests to determine box design conducted during the war by the Forest Products Laboratory¹ contributed in marked degree to the safe and economical movement of munitions and supplies to the American Expeditionary Forces. Immense monetary savings were effected by the correct construction of containers as to materials used, cargo space conserved, and reduction of loss by breakage of packages.

The methods employed to attain these results are now available for general commercial purposes through the services and publications of the Forest Products Laboratory, which continues to investigate the resources of forest products in their relation to many important industrial developments too numerous to mention.

IMPORTANCE OF BOX INDUSTRY.

The importance of the box industry is but little appreciated. United States Forest Service data shows that the manufacture of packing boxes, shooks, crates, crating, fruit and vegetable packages and baskets, is the second largest wood-consuming industry in the United States, and that in 1912, 11.6 per cent of all lumber produced in the country was converted into boxes.

There are innumerable special demands for boxes and crates, but on the whole it is the manufacturing industry and intensive fruit-raising and market-gardening which creates the demand for boxes.

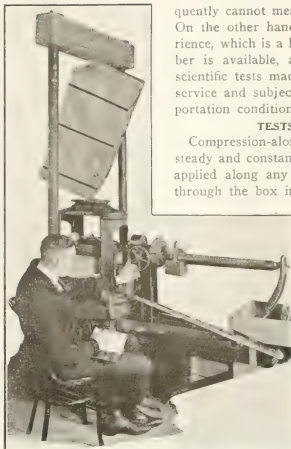
than is necessary to balance the average strength in every other part. The data for designing such a box cannot be obtained from observation in actual commercial service, because the observer sees the box only after it has completely failed and consequently cannot measure the hazard which completes the failure. On the other hand, laboratory studies combine practical experience, which is a knowledge of the designs in use, of what lumber is available, and of box factory practices, with accurate scientific tests made on the package itself, packed as in actual service and subjected to strains that approximate actual transportation conditions.

TESTS TO DETERMINE A GOOD BOX.

Compression-along-an-edge test, as its name implies, is a steady and constantly increasing pressure (measured in pounds) applied along any edge and with the opposite edge diagonally through the box in direct line with the pressure exerted. The

corner-wise test is applied in the same way to any corner of the package with the opposite corner in a direct line with the pressure. These two tests measure the strength of the box in withstanding any external pressure and to a limited extent approximate the hazard of the lower tiers of boxes in a pile. By themselves these tests are insufficient to determine comparative weaknesses in the various factors that enter into properly balanced construction.

Another is the drop test, for comparing the strength of one box with that of another. The box is packed with the actual contents as in service and dropped from a predetermined height directly on the corner, which is a fall that occurs in actual service. The value of the conclusions is limited, however, because one failure runs so rapidly into another that the observer does not always get the true measure of the weaknesses.



DIAGONAL COMPRESSION TEST.



EXTERIOR VIEW OF 14-FOOT DRUM BOX-TESTING MACHINE.



INTERIOR VIEW OF DRUM, SHOWING PACKAGE CONSTRUCTION TEST.

WHAT IS A GOOD BOX?

A properly designed packing box has enough strength in each part for the intended purpose and no more strength in any part

The most practical method yet devised is the revolving drum

¹United States Department of Agriculture, Forest Service, Madison, Wisconsin. (In cooperation with the University of Wisconsin.)

test. The drum is a hexagon-sided machine and revolves slowly. The box is packed with the actual contents, as in commercial service, and placed in this drum. In the drum are arranged a series of hazards, which cause the box to follow a regular cycle of drops, falling upon sides, top, bottom, ends, edges, corners, and flat-wise upon a projection similar to the corner of another box. These drops simulate the usual hazards of transportation, excepting the heavy static pressure received by a box in the lower tiers of a pile, which is secured by means of the compression-on-edge test previously described.

As the box moves on from one drop to the next the observer notes the beginning of the failure of the weakest point in its construction and follows the development of that weakness until the box entirely fails and lets its contents out.

The weak feature of the box may be too few nails, nails of too short a length, nails driven in a crack and thus having no great holding power, or some other form of nail failure; and the tests clearly show this weakness. The material in the sides, top,



TESTING LAMP CONTAINERS IN SIX-FOOT DRUM.

or bottom may be too thin, so that the shocks of the falls pull the wood from the nails. The wood may split or break across the grain.

Any one of the numerous weaknesses of packing-box construction may be developed in this test until finally the observer is able to build up a box that is practically equally strong in every feature. Boxes are then built, packed, and tested until the presence of this balance in design is clearly demonstrated. Such a demonstration will show failures ultimately occurring in average proportion in nails pulling from the wood, wood pulling from the nails, splitting or breaking of ends, sides, tops or bottoms, and through the weaknesses of the species themselves.

AIDS IN BOX DESIGNING.

As a result of many box tests no general rules can be laid down, for the reason that each box must be built with reference not only to the external shocks it will have to endure, but also to the nature of the article it is to contain.

QUALITY AND CONDITION OF LUMBER.

Boxes should be manufactured from lumber which is sound, free from decay and dote, and well-seasoned. The average moisture content of the wood should be from 12 to 18 per cent, based on the weight after oven-drying.

The effect on the strength of the box caused by the moisture condition of the lumber and the change of moisture condition in storage is very marked, the strength relation showing a variation in the holding power of the nailing from 10 to 100 per cent.

INTERCHANGEABILITY OF SPECIES COMMONLY USED FOR BOXES.

The results of the drum tests have made it possible to divide the kinds of wood generally used in packing boxes into the four

groups shown in the following table. Thus, any wood in one group substituted for any other wood in the same group and built into a box of the same specifications would give practically the same results in commercial service.

APPROXIMATE AVERAGE WEIGHT OF VARIOUS SPECIES OF WOODS USED IN PACKING-BOXES.												
Thickness in Inches.												
Species.	1/4	3/8	1/2	5/8	3/4	7/8	1	1 1/8	1 1/4	1 1/2	1 3/4	2
Group I.	Pounds per square inch surface measurement.											
White pine . . .	.014	.013	.012	.0098	.0078	.0059	.0049	.0039	.0039	.0039	.0039	.0039
Norway pine . . .	.017	.016	.015	.012	.0098	.0078	.0059	.0049	.0049	.0049	.0049	.0049
Aspen . . . . .	.014	.013	.012	.0098	.0078	.0059	.0049	.0039	.0039	.0039	.0039	.0039
Spruce . . . . .	.014	.013	.012	.010	.0081	.0060	.0050	.0040	.0040	.0040	.0040	.0040
Western yellow pine . . .	.013	.012	.011	.0094	.0075	.0056	.0047	.0038	.0038	.0038	.0038	.0038
Cottonwood . . .	.015	.014	.013	.010	.0084	.0065	.0052	.0040	.0040	.0040	.0040	.0040
Yellow poplar . . .	.014	.013	.012	.010	.0081	.0060	.0050	.0040	.0040	.0040	.0040	.0040
Balsam fir . . . .	.013	.012	.011	.0094	.0075	.0056	.0047	.0038	.0038	.0038	.0038	.0038
Chestnut . . . . .	.015	.014	.013	.011	.0087	.0065	.0054	.0043	.0043	.0043	.0043	.0043
Sugar pine . . . .	.014	.013	.012	.0098	.0078	.0059	.0049	.0039	.0039	.0039	.0039	.0039
Basswood . . . . .	.013	.012	.011	.0094	.0075	.0056	.0047	.0038	.0038	.0038	.0038	.0038
Cypress . . . . .	.017	.016	.015	.012	.0098	.0074	.0061	.0049	.0049	.0049	.0049	.0049
Willow . . . . .	.014	.013	.012	.010	.0081	.0060	.0050	.0040	.0040	.0040	.0040	.0040
Noble fir . . . . .	.014	.013	.012	.010	.0081	.0060	.0050	.0040	.0040	.0040	.0040	.0040
Magnolia . . . . .	.018	.016	.015	.013	.010	.0076	.0063	.0051	.0051	.0051	.0051	.0051
Buckeye . . . . .	.013	.012	.011	.0091	.0072	.0054	.0045	.0036	.0036	.0036	.0036	.0036
White fir . . . . .	.013	.012	.011	.0094	.0075	.0056	.0047	.0038	.0038	.0038	.0038	.0038
Cedar . . . . .	.016	.015	.014	.011	.0090	.0067	.0055	.0043	.0043	.0043	.0043	.0043
Redwood . . . . .	.013	.012	.011	.0091	.0072	.0054	.0045	.0036	.0036	.0036	.0036	.0036
Butternut . . . . .	.014	.013	.012	.0098	.0078	.0059	.0049	.0039	.0039	.0039	.0039	.0039
Cucumber . . . . .	.017	.016	.015	.012	.0098	.0074	.0061	.0049	.0049	.0049	.0049	.0049
Alpine fir . . . . .	.012	.011	.010	.0083	.0067	.0050	.0041	.0033	.0033	.0033	.0033	.0033
Lodgepole pine . . .	.015	.014	.013	.010	.0084	.0063	.0052	.0042	.0042	.0042	.0042	.0042
Group II.												
Southern yellow pine . . .	.030	.019	.017	.015	.012	.0087	.0072	.0058	.0058	.0058	.0058	.0058
Hemlock . . . . .	.015	.014	.013	.010	.0084	.0063	.0052	.0042	.0042	.0042	.0042	.0042
Virginia . . . . .	.020	.018	.017	.014	.011	.0085	.0071	.0057	.0057	.0057	.0057	.0057
Douglas pine . . .	.017	.016	.015	.012	.0096	.0072	.0060	.0048	.0048	.0048	.0048	.0048
Larch . . . . .	.019	.017	.016	.013	.011	.0089	.0067	.0054	.0054	.0054	.0054	.0054
Group III.												
White elm . . . . .	.017	.016	.015	.012	.0098	.0074	.0061	.0049	.0049	.0049	.0049	.0049
Red gum . . . . .	.018	.016	.015	.013	.010	.0076	.0063	.0051	.0051	.0051	.0051	.0051
Sycamore . . . . .	.018	.016	.015	.013	.010	.0076	.0063	.0051	.0051	.0051	.0051	.0051
Pumpkin ash . . .	.019	.017	.016	.013	.011	.0080	.0067	.0053	.0053	.0053	.0053	.0053
Buck ash . . . . .	.018	.017	.016	.013	.010	.0078	.0065	.0052	.0052	.0052	.0052	.0052
Black gum . . . . .	.018	.017	.016	.013	.010	.0078	.0065	.0052	.0052	.0052	.0052	.0052
Tupelo . . . . .	.019	.017	.016	.013	.011	.0080	.0067	.0053	.0053	.0053	.0053	.0053
Maple, soft or silver . . .	.017	.016	.015	.012	.0098	.0074	.0061	.0049	.0049	.0049	.0049	.0049
Group IV.												
Hard maple . . . .	.022	.020	.019	.016	.013	.0095	.0080	.0064	.0064	.0064	.0064	.0064
Beech . . . . .	.022	.020	.019	.016	.013	.0095	.0080	.0064	.0064	.0064	.0064	.0064
Oak . . . . .	.023	.022	.020	.017	.013	.010	.0083	.0067	.0067	.0067	.0067	.0067
Hickory . . . . .	.019	.017	.016	.013	.010	.0078	.0065	.0052	.0052	.0052	.0052	.0052
Birch . . . . .	.022	.022	.019	.016	.012	.0093	.0078	.0062	.0062	.0062	.0062	.0062
Rock elm . . . . .	.023	.021	.020	.016	.013	.0098	.0081	.0065	.0065	.0065	.0065	.0065
White ash . . . . .	.019	.018	.016	.014	.011	.0082	.0069	.0055	.0055	.0055	.0055	.0055

WEIGHTS GIVEN IN POUNDS PER SQUARE INCH SURFACE MEASUREMENT FOR USUAL PACKING-BOX THICKNESS. SPECIES IN AIR-DRY CONDITION, 12 TO 15 PER CENT MOISTURE CONTENT.

DETAILS OF CONSTRUCTION.

THICKNESS OF LUMBER.

Where woods in Groups I and II are 1/2-inch thick or less, woods in Groups III and IV can be 1/16-inch less in thickness; where woods in Groups I and II are more than 1/2-inch thick, and not more than 1-inch, woods in Groups III and IV can be 1/8-inch less in thickness.

WIDTHS OF LUMBER.

No piece less than 2 1/2 inches face width should be used in any part except cleats. Any part of a box which is 6 inches or less in width should be made in one piece.

JOINING.

All parts which are of two pieces or more should be tongued and grooved, except ends, which may be butt-jointed and fastened with not less than three corrugated fasteners, two driven from one side and one from the opposite side, or cleated. Cleats should be not less than two inches wide and the same thickness as the sides, tops and bottoms.

NAILS.

The holding power of cement-coated, plain and barbed nails was obtained by testing a standard seven-penny nail driven to a depth of one inch in dry wood and is given below.

LOAD IN POUNDS PER NAIL.			
Species of Wood.	Cement-coated Nails.	Plain Nails.	Barbed Nails.
Cement-coated nails	225	133	430
Plain nails	140	82	400
Barbed nails	110	70	335

The length of the nail rather than the gage of the wire is the principal factor in its holding power, and as nails split the wood it is desirable to use as small a gage as can be driven in nailing machines. Nails should be driven flush with the wood, and never be overdriven, as this often causes the heads to break the fiber of the wood under the heads, leaving no holding power in the wood. The evil effects of overdriving nails increases as

the material of the board is made thinner. This may be obviated in a measure by greater care in driving the nails.

Six-penny nails and smaller should be spaced not more than two inches apart when driven in the side grain of the end and not more than $1\frac{1}{4}$ inches when driven in the end grain. The spacing of nails in end construction should be increased from the above, $\frac{1}{4}$ inch for each penny over six.

American Society for Testing Materials.

Reports of Committee D-11 on Rubber Products and Committee D-13 on Rubber Textiles.

AT THE ANNUAL MEETING of the American Society for Testing Materials held at Atlantic City, New Jersey, June 24-27, reports were made by Committee D-11 on rubber belting, hose for pneumatic tools, and insulating tape, and by Committee D-13 on the rate of gain in tensile strength due to moistened absorption in rubber textiles. The proposed revisions of the tentative specifications follow:

PROPOSED REVISION OF TENTATIVE SPECIFICATIONS FOR RUBBER BELTING FOR POWER TRANSMISSION (D 53-18 T.)

The committee recommends that the following revisions be made in these specifications, and the specifications as revised continued as tentative:

- Section 8.—Change the length of sample of belting submitted for inspection from 30 to 30 inches.
- Add new Section 10 as follows:
 - The filler or web strength of the cotton duck in the belting shall be determined as follows: A transverse strip $1\frac{1}{2}$ inches wide shall be cut from the belting and opened up into a series of various widths, and by the belting shall be ravelled down to a width of 1 inch and tested in a fabric-testing machine, the minimum width of jaws of which is $1\frac{1}{2}$ inches, the distance between jaws, 10 inches, and the speed of separation of jaws, 20 inches per minute. The tensile strength shall be at least 175 pounds.
- Change present Section 10 to Section 11, and change the length of specimens submitted for inspection from 36 to 30 inches.
- Change present Section 11 to Section 12 and reword Paragraph (a) as follows:
 - The friction test or adhesion between the plies shall be conducted in the following manner: Specimens, each 1 inch in width, two plies in thickness and at least 4 inches in length, shall be prepared in sufficient number to test the adhesion between all plies. These should be taken transversely for belting 4 inches and over in width, and longitudinally for lesser widths. The two plies shall be separated for a distance of about 10 inches and by means of these separated ends, the test specimen shall be mounted freely between the upper fixed pair of jaws and the lower pulling pair of jaws, the latter weighted to 18 pounds. The rate of separation under this test shall not be greater than 1 inch per minute.

Omit present paragraphs (b) and (c) and add new paragraph (b) as follows:

- A suitable friction-testing machine where available may be used to make the above test, in which case the pull required to cause a slipping of 1 inch per minute shall be not less than 18 pounds.
5. Change present Section 12 to Section 13, and reword Paragraph (c) as follows:
- The elongation at the breaking load shall be such that the original 2-inch gage length of the test specimen for the cover shall stretch to not less than 9 inches, and for the bedding to not less than 10 inches.

LEADER HOSE FOR USE WITH PNEUMATIC TOOLS.

SERIAL DESIGNATION: D-19T. ISSUED, 1919.

- (a) These specifications cover leader hose for air tools working at not more than 125 pounds pressure.
- The hose is of two classes:
 - Braided leader hose has a reinforcement of three plies of braided cotton yarn between the inner tube and the outer rubber cover.
 - Wrapped leader hose has a reinforcement of plies of cotton canvas between the inner rubber tube and the outer rubber cover.

1. MAXIMUM SIZE

- The hose shall consist of: (a) an outer rubber tube; (b) cloth-braided layers or canvas plies; (c) an inner rubber tube; (d) a wire armor when specified.

3. The inner rubber tube shall be smooth, uniform in quality, and thickness and free from imperfections.

- The reinforcement of braided leader hose shall consist of three plies of cotton braided layers evenly and firmly woven over the inner tube. Each layer shall be well impregnated with a rubber compound suitable for the required service.

(b) The reinforcement of wrapped leader hose shall consist of cotton canvas cut on a 45-degree bias and applied evenly and firmly over the inner tube. Each ply shall be well frictioned on both sides with rubber compound.

(c) The cotton shall be as free from unsightly defects, dirt, knots, lumps, and irregularities of twist as is consistent with the best manufacturing practice.

(b) The reinforcement shall be sufficiently strong to enable the hose to successfully withstand the hydrostatic pressure test, yet at the same time be soft and pliable.

5. The rubber cover shall be uniform in quality and thickness, and free from injurious defects.

6. When specified, the hose shall be given an extra covering of armor (galvanized steel wire 7/32 by 3/64-inch, wrapped with $\frac{1}{4}$ -inch space between adjacent wires).

11. PHYSICAL PROPERTIES AND TESTS.

7. Where applicable, references are made below to the Standard Methods for Testing of Cotton Rubber-Lined Hose (Serial Designation; D 15b) of the American Society for Testing Materials.

(b) The temperature of the test room and samples shall be as defined in Section 19 of Standard Methods D 15.

9. Prior to the hydrostatic test specified in Section 12 (b), a section of hose 16 inches long shall be cut at any place from each test length and subjected to the following tests:

10. The adhesive quality of the rubber impregnation binding the plies together shall be determined in the case of braided leader hose by suspending a 20-pound weight from the separated end of a ply having a 1-inch section, cut longitudinally from the 16-inch sample described in Section 9.

In the case of wrapped leader hose it shall be determined by suspending a 20-pound weight from the separated end of the duck of a 1-inch ring cut from the 16-inch sample described in Section 9, the force being applied radially.

In both cases the rate of separation of the plies shall not be greater than 1 inch per minute.

11. (a) The tests of tube and cover shall be conducted in accordance with Sections 18, 19, 20, 22, 23, 24, and 25 of the Standard Methods D 15.

(b) The breaking load shall be such that the original 2-inch gage length of the test specimens for both the tube and cover shall stretch to not less than 11 inches.

(c) The method of conducting the hydrostatic pressure tests shall be in accordance with Section 26 of Standard Methods D 15.

(d) Each length of hose shall be subjected to a proof pressure test of 250 pounds per square inch for five minutes to expose imperfections. On armored hose this test shall be made after the removal of the armor.

(e) From each lot of ten lengths or less of hose inspected, one length shall be further subjected to a pressure test of 800 pounds per square inch for 10 minutes, which it shall withstand without bursting. On large orders the number of tests may be reduced to not less than three at the option of the inspector representing the purchaser.

111. STANDARD DIMENSIONS AND WEIGHTS.

12. Unless otherwise specified, the hose shall be furnished in 10 foot lengths, which shall weigh not more than 4 pounds. The ends of each length shall be uncapped and without fittings.

14. (a) The minimum tube and cover thickness shall be as follows:

Internal Diameter of Hose, Inch.	Minimum Tube Thickness, Inch.	Minimum Cover Thickness, Inch.
7/16	3/32	1/16

(b) The gage of tube and cover shall be measured with the braided embedded in the rubber.

IV. MARKING.

15. Each length of hose shall have imbedded in rubber, midway between the ends, a brand showing the name of the manufacturer, the month and year of manufacture, the trade name of the hose and the legend "Leader 125 lb. A.S.T.M. Specifications."

V. INSPECTION AND REJECTION.

16. (a) The manufacturer shall notify the purchaser sufficiently in advance of the completion of the hose to permit of arrangements for inspection.

(b) The manufacturer shall afford the inspector representing the purchaser, without charge, all reasonable facilities to satisfy him that the hose is being furnished in accordance with these specifications. The tests and inspections shall be made at the place of manufacture prior to shipment, unless otherwise specified, and shall be so conducted as not to interfere unnecessarily with the operation of the manufacturer.

(c) The purchaser may make the tests to govern the acceptance or rejection of the hose in his own laboratory or elsewhere. Such tests, however, shall be made at the expense of the purchaser. Samples of rejected hose shall be preserved for two weeks from the date of the test report. In case of dissatisfaction with the results of the tests, the manufacturer may make claim for a rehearing within that time.

"Proceedings," American Society for Testing Materials, Volume XXIII, Part 1, page 676 (1918).

TENTATIVE SPECIFICATIONS FOR ADHESIVE INSULATING TAPE.

SERIAL DESIGNATION: D-19 T. ISSUED, 1919.

1. These specimens cover a friction tape composed of cotton sheeting impregnated with an adhesive insulating compound.

I. MANUFACTURE.

2. The cotton sheeting layer shall be made from a sheeting evenly and firmly woven of good cotton yarns as free from unsightly defects, knots, lumps and irregularities of twist as is consistent with the best manufacturing practice. The threads shall run in straight lines without waviness, so as to reduce to a minimum the raveling of the cloth when cut into tape.

3. The frictioning compound shall be an adhesive and insulating compound practically free from free sulphur (not over 0.05 per cent) or other substances which would have a deteriorating effect on copper or other metals or on the fabric.

4. The fabric shall be thoroughly impregnated and evenly covered on both sides with the frictioning compound.

5. The thickness of the tape shall be not less than 0.013 nor more than 0.017-inch, when measured with a rubber spring micrometer with 0.4-inch diameter foot.

6. The compound shall adhere firmly to the fabric and shall not pull away from the fabric so as to leave bare spots when adjacent thicknesses of the tape are separated.

II. PHYSICAL PROPERTIES AND TESTS.

7. When the tape is held before a strong light, the number of pin holes noted per linear yard of tape, $\frac{3}{4}$ -inch wide, shall not exceed two.

8. The tensile strength per 1-inch width shall be not less than 30 pounds. The initial distance between the jaws of the testing machine shall be 12 inches, and the rate of separation of the jaws shall be 20 inches per minute.

9. When wrapped on a clean, smooth copper rod and baked at 100 degrees C. for 16 hours, the compound shall not discolor the copper.

10. (a) The adhesion of the friction coat of compound between the plies shall be such that when a strip of tape 2 feet long and $\frac{3}{4}$ -inch wide is taken from a roll and wound upon a 1-inch mandrel under tension of 7½ pounds at the rate of 30 inches per minute, a weight of 3 pounds shall not cause the plies to separate at a greater rate than 30 inches per minute.

(b) After a strip has been exposed to dry heat at 100 degrees C. for 18 hours and then cooled to room temperature, a test specimen shall withstand the test prescribed in the Paragraph (a), except that the weight applied to unwind the tape shall be 1 pound instead of 3 pounds.

11. The test for dielectric strength shall be made as follows: the tape shall be spirally wound with one-third lap on a smooth metal rod, 1 inch in diameter, for a distance of 6 inches. Two inches in the center shall be covered with tin foil and bound down securely with tape, and an alternating potential of 1,000 volts, of a frequency of not over 65 cycles, shall be applied for five minutes between the metal rod and the tin foil without puncture.

12. One $\frac{1}{2}$ -pound roll for each 250 rolls shall be selected at random for the various tests. At least two feet of the outer layers shall be removed and one specimen taken for each test. If the tape fails in any one test, two additional specimens shall be taken. If the tape fails in either of these two additional tests, the material shall be rejected.

III. STANDARD WEIGHT, DIMENSIONS AND VARIATIONS.

13. The net weight of the tape, $\frac{3}{4}$ -inch wide, shall be not less than 8 ounces per roll, exclusive of the wrapping and box.

14. The length of $\frac{3}{4}$ -inch tape shall be not less than 55 yards per pound.

15. The width shall not vary from that specified more than ± 0.03 inch.

IV. PACKING AND MARKING.

16. Each roll shall be packed in oiled paper or metal foil and enclosed in a suitable box. The wrapping shall be secure and shall thoroughly protect the contents.

17. Each box shall be marked with the name of the manufacturer or trade mark, and the nominal width and weight of the tape.

V. INSPECTION.

18. The tape shall be tested and inspected within four weeks of date of delivery.

VARIATION IN STRENGTH OF TEXTILES AT VARIOUS MOISTURE REGAINS, WITH RELATION TO THE WEIGHT OF THE FABRIC.¹

From practical laboratory experiments it has long been known that the rate of gain in tensile strength due to moisture absorption in various textiles bears a very direct relation to the weight of the fabric. While very heavy fabrics and those woven closely are slow in reaching their full regain, the increase in strength is very great. On the other hand, light fabrics of a gauze-like nature obtain their regains quickly and show but little increase in strength from this source. It is therefore manifestly incorrect to assume a standard rate of increase for all weights of textiles. In order to investigate this subject the chairman tested a variety of fabrics, ranging from a very open cheese-cloth weighing about 1½ ounce per square yard up to the heaviest obtainable duck, having a weight of about 50 ounces per square yard.

The fabrics were tested in groups of eight or ten specimens each at various regains, passing from a bone-dry condition at one end of the scale to that at which all the moisture possible had been absorbed from an atmosphere having a relative humidity of 80 per cent. The moisture content was determined in each case by weighing on analytical balances before and after drying in an electric oven at a temperature of 220 degrees F.

The results are plotted in Figure 1, and show to the same scale the wide range in strength increase with the various weights of fabric. In all cases strip specimens were used measured to 1½ inches wide and ravelled accurately to 1 inch. The distance between jaws was 3 inches in all cases and the speed of the moving jaw 12 inches per minute. While weigh-

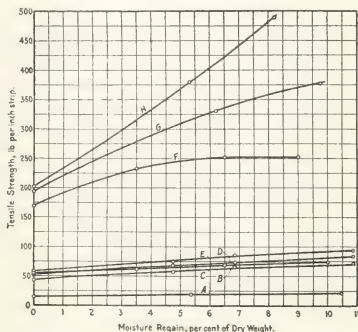


FIG. 1. VARIATION IN TENSILE STRENGTH IN TEXTILES DUE TO MOISTURE.

ing, the moist specimens were in all cases enclosed in air-tight containers, so that the moisture could not vary. The following is the detail of the tests:

FABRIC A.—An open cheese cloth of ordinary grade cotton 40 warp and 32 filling threads per inch, weighing bone dry 1.45 ounces per square yard or, a regain of 6 per cent, 1.54 ounces.

Moisture, per cent..... 0..... 5.37 10.49

Average tensile strength, pounds..... 17.0 19.8 21.8

FABRIC B.—30-inch 7-ounce Osnaburg. A very good standard fabric of this class.

Moisture, per cent..... 0..... 4.76 6.87 10.88

Average tensile strength, pounds..... 43.6 57.8 67.4 71.9

FABRIC C.—Mercerized cotton airplane wing fabric. Normal weight 4 ounces per square yard; 3/80" yarn, with 68 threads per inch of width in both warp and filling.

Moisture, per cent..... 0..... 4.76 6.87 10.88

Average tensile strength, pounds..... 54.3 69.3 73.0 83.3

FABRIC D.—30-inch 7-ounce Osnaburg. Exceptionally clean. The bone-dry weight was 8.2 ounces per square yard and, at 6 per cent regain, 8.60 ounces.

Moisture, per cent..... 0..... 4.76 6.87 10.88

Average tensile strength, pounds..... 56.1 75.1 85.3 93.1

FABRIC E.—Standard 11/23" by 11/23" square woven tire fabric, made of carded Egyptian cotton, 17½ ounces per square yard, under normal conditions.

Moisture, per cent..... 0..... 4.76 6.87 10.88

Average tensile strength, pounds..... 56.1 75.1 85.3 93.1

FABRIC F.—Standard 11/23" by 11/23" square woven tire fabric, made of carded Egyptian cotton, 17½ ounces per square yard, under normal conditions.

Moisture, per cent..... 0..... 4.76 6.87 10.88

Average tensile strength, pounds..... 56.1 75.1 85.3 93.1

FABRIC G.—A moderately heavy duck used in the manufacture of stitched canvas belts. The warp threads are 6 ply 26 per inch and the filling 5 ply 16 per inch. Bone-dry the canvas weighed 27.5 oz. per sq. yd. and, at 6 per cent regain, 29.1 ounces.

Moisture, per cent..... 0..... 4.76 6.87 10.88

Average tensile strength, pounds..... 194 320 373

FABRIC H.—A moderately heavy duck used in the manufacture of stitched canvas belts. The warp threads are 6 ply 26 per inch and the filling 5 ply 16 per inch. Bone-dry the canvas weighed 27.5 oz. per sq. yd. and, at 6 per cent regain, 29.1 ounces.

Moisture, per cent..... 0..... 4.76 6.87 10.88

Average tensile strength, pounds..... 194 320 373

FABRIC I.—A moderately heavy duck used in the manufacture of stitched canvas belts. The warp threads are 6 ply 26 per inch and the filling 5 ply 16 per inch. Bone-dry the canvas weighed 27.5 oz. per sq. yd. and, at 6 per cent regain, 29.1 ounces.

Moisture, per cent..... 0..... 4.76 6.87 10.88

Average tensile strength, pounds..... 194 320 373

FABRIC J.—A moderately heavy duck used in the manufacture of stitched canvas belts. The warp threads are 6 ply 26 per inch and the filling 5 ply 16 per inch. Bone-dry the canvas weighed 27.5 oz. per sq. yd. and, at 6 per cent regain, 29.1 ounces.

Moisture, per cent..... 0..... 4.76 6.87 10.88

Average tensile strength, pounds..... 194 320 373

FABRIC K.—A moderately heavy duck used in the manufacture of stitched canvas belts. The warp threads are 6 ply 26 per inch and the filling 5 ply 16 per inch. Bone-dry the canvas weighed 27.5 oz. per sq. yd. and, at 6 per cent regain, 29.1 ounces.

Moisture, per cent..... 0..... 4.76 6.87 10.88

Average tensile strength, pounds..... 194 320 373

FABRIC L.—A moderately heavy duck used in the manufacture of stitched canvas belts. The warp threads are 6 ply 26 per inch and the filling 5 ply 16 per inch. Bone-dry the canvas weighed 27.5 oz. per sq. yd. and, at 6 per cent regain, 29.1 ounces.

Moisture, per cent..... 0..... 4.76 6.87 10.88

Average tensile strength, pounds..... 194 320 373

FABRIC M.—A moderately heavy duck used in the manufacture of stitched canvas belts. The warp threads are 6 ply 26 per inch and the filling 5 ply 16 per inch. Bone-dry the canvas weighed 27.5 oz. per sq. yd. and, at 6 per cent regain, 29.1 ounces.

Moisture, per cent..... 0..... 4.76 6.87 10.88

Average tensile strength, pounds..... 194 320 373

FABRIC N.—A moderately heavy duck used in the manufacture of stitched canvas belts. The warp threads are 6 ply 26 per inch and the filling 5 ply 16 per inch. Bone-dry the canvas weighed 27.5 oz. per sq. yd. and, at 6 per cent regain, 29.1 ounces.

Moisture, per cent..... 0..... 4.76 6.87 10.88

Average tensile strength, pounds..... 194 320 373

FABRIC O.—A moderately heavy duck used in the manufacture of stitched canvas belts. The warp threads are 6 ply 26 per inch and the filling 5 ply 16 per inch. Bone-dry the canvas weighed 27.5 oz. per sq. yd. and, at 6 per cent regain, 29.1 ounces.

Moisture, per cent..... 0..... 4.76 6.87 10.88

Average tensile strength, pounds..... 194 320 373

FABRIC P.—A moderately heavy duck used in the manufacture of stitched canvas belts. The warp threads are 6 ply 26 per inch and the filling 5 ply 16 per inch. Bone-dry the canvas weighed 27.5 oz. per sq. yd. and, at 6 per cent regain, 29.1 ounces.

Moisture, per cent..... 0..... 4.76 6.87 10.88

Average tensile strength, pounds..... 194 320 373

FABRIC Q.—A moderately heavy duck used in the manufacture of stitched canvas belts. The warp threads are 6 ply 26 per inch and the filling 5 ply 16 per inch. Bone-dry the canvas weighed 27.5 oz. per sq. yd. and, at 6 per cent regain, 29.1 ounces.

Moisture, per cent..... 0..... 4.76 6.87 10.88

Average tensile strength, pounds..... 194 320 373

FABRIC R.—A moderately heavy duck used in the manufacture of stitched canvas belts. The warp threads are 6 ply 26 per inch and the filling 5 ply 16 per inch. Bone-dry the canvas weighed 27.5 oz. per sq. yd. and, at 6 per cent regain, 29.1 ounces.

Moisture, per cent..... 0..... 4.76 6.87 10.88

Average tensile strength, pounds..... 194 320 373

FABRIC S.—A moderately heavy duck used in the manufacture of stitched canvas belts. The warp threads are 6 ply 26 per inch and the filling 5 ply 16 per inch. Bone-dry the canvas weighed 27.5 oz. per sq. yd. and, at 6 per cent regain, 29.1 ounces.

Moisture, per cent..... 0..... 4.76 6.87 10.88

Average tensile strength, pounds..... 194 320 373

FABRIC T.—A moderately heavy duck used in the manufacture of stitched canvas belts. The warp threads are 6 ply 26 per inch and the filling 5 ply 16 per inch. Bone-dry the canvas weighed 27.5 oz. per sq. yd. and, at 6 per cent regain, 29.1 ounces.

Moisture, per cent..... 0..... 4.76 6.87 10.88

Average tensile strength, pounds..... 194 320 373

FABRIC U.—A moderately heavy duck used in the manufacture of stitched canvas belts. The warp threads are 6 ply 26 per inch and the filling 5 ply 16 per inch. Bone-dry the canvas weighed 27.5 oz. per sq. yd. and, at 6 per cent regain, 29.1 ounces.

Moisture, per cent..... 0..... 4.76 6.87 10.88

Average tensile strength, pounds..... 194 320 373

FABRIC V.—A moderately heavy duck used in the manufacture of stitched canvas belts. The warp threads are 6 ply 26 per inch and the filling 5 ply 16 per inch. Bone-dry the canvas weighed 27.5 oz. per sq. yd. and, at 6 per cent regain, 29.1 ounces.

Moisture, per cent..... 0..... 4.76 6.87 10.88

Average tensile strength, pounds..... 194 320 373

FABRIC W.—A moderately heavy duck used in the manufacture of stitched canvas belts. The warp threads are 6 ply 26 per inch and the filling 5 ply 16 per inch. Bone-dry the canvas weighed 27.5 oz. per sq. yd. and, at 6 per cent regain, 29.1 ounces.

Moisture, per cent..... 0..... 4.76 6.87 10.88

Average tensile strength, pounds..... 194 320 373

FABRIC X.—A moderately heavy duck used in the manufacture of stitched canvas belts. The warp threads are 6 ply 26 per inch and the filling 5 ply 16 per inch. Bone-dry the canvas weighed 27.5 oz. per sq. yd. and, at 6 per cent regain, 29.1 ounces.

Moisture, per cent..... 0..... 4.76 6.87 10.88

Average tensile strength, pounds..... 194 320 373

FABRIC Y.—A moderately heavy duck used in the manufacture of stitched canvas belts. The warp threads are 6 ply 26 per inch and the filling 5 ply 16 per inch. Bone-dry the canvas weighed 27.5 oz. per sq. yd. and, at 6 per cent regain, 29.1 ounces.

Moisture, per cent..... 0..... 4.76 6.87 10.88

Average tensile strength, pounds..... 194 320 373

FABRIC Z.—A moderately heavy duck used in the manufacture of stitched canvas belts. The warp threads are 6 ply 26 per inch and the filling 5 ply 16 per inch. Bone-dry the canvas weighed 27.5 oz. per sq. yd. and, at 6 per cent regain, 29.1 ounces.

Moisture, per cent..... 0..... 4.76 6.87 10.88

Average tensile strength, pounds..... 194 320 373

FABRIC AA.—A moderately heavy duck used in the manufacture of stitched canvas belts. The warp threads are 6 ply 26 per inch and the filling 5 ply 16 per inch. Bone-dry the canvas weighed 27.5 oz. per sq. yd. and, at 6 per cent regain, 29.1 ounces.

Moisture, per cent..... 0..... 4.76 6.87 10.88

Average tensile strength, pounds..... 194 320 373

FABRIC AB.—A moderately heavy duck used in the manufacture of stitched canvas belts. The warp threads are 6 ply 26 per inch and the filling 5 ply 16 per inch. Bone-dry the canvas weighed 27.5 oz. per sq. yd. and, at 6 per cent regain, 29.1 ounces.

Moisture, per cent..... 0..... 4.76 6.87 10.88

Average tensile strength, pounds..... 194 320 373

FABRIC AC.—A moderately heavy duck used in the manufacture of stitched canvas belts. The warp threads are 6 ply 26 per inch and the filling 5 ply 16 per inch. Bone-dry the canvas weighed 27.5 oz. per sq. yd. and, at 6 per cent regain, 29.1 ounces.

Moisture, per cent..... 0..... 4.76 6.87 10.88

Average tensile strength, pounds..... 194 320 373

FABRIC AD.—A moderately heavy duck used in the manufacture of stitched canvas belts. The warp threads are 6 ply 26 per inch and the filling 5 ply 16 per inch. Bone-dry the canvas weighed 27.5 oz. per sq. yd. and, at 6 per cent regain, 29.1 ounces.

Moisture, per cent..... 0..... 4.76 6.87 10.88

Average tensile strength, pounds..... 194 320 373

FABRIC AE.—A moderately heavy duck used in the manufacture of stitched canvas belts. The warp threads are 6 ply 26 per inch and the filling 5 ply 16 per inch. Bone-dry the canvas weighed 27.5 oz. per sq. yd. and, at 6 per cent regain, 29.1 ounces.

Moisture, per cent..... 0..... 4.76 6.87 10.88

Average tensile strength, pounds..... 194 320 373

FABRIC AF.—A moderately heavy duck used in the manufacture of stitched canvas belts. The warp threads are 6 ply 26 per inch and the filling 5 ply 16 per inch. Bone-dry the canvas weighed 27.5 oz. per sq. yd. and, at 6 per cent regain, 29.1 ounces.

Moisture, per cent..... 0..... 4.76 6.87 10.88

Average tensile strength, pounds..... 194 320 373

FABRIC AG.—A moderately heavy duck used in the manufacture of stitched canvas belts. The warp threads are 6 ply 26 per inch and the filling 5 ply 16 per inch. Bone-dry the canvas weighed 27.5 oz. per sq. yd. and, at 6 per cent regain, 29.1 ounces.

Moisture, per cent..... 0..... 4.76 6.87 10.88

Average tensile strength, pounds..... 194 320 373

FABRIC AH.—A moderately heavy duck used in the manufacture of stitched canvas belts. The warp threads are 6 ply 26 per inch and the filling 5 ply 16 per inch. Bone-dry the canvas weighed 27.5 oz. per sq. yd. and, at 6 per cent regain, 29.1 ounces.

Moisture, per cent..... 0..... 4.76 6.87 10.88

Average tensile strength, pounds..... 194 320 373

FABRIC AI.—A moderately heavy duck used in the manufacture of stitched canvas belts. The warp threads are 6 ply 26 per inch and the filling 5 ply 16 per inch. Bone-dry the canvas weighed 27.5 oz. per sq. yd. and, at 6 per cent regain, 29.1 ounces.

Moisture, per cent..... 0..... 4.76 6.87 10.88

Average tensile strength, pounds..... 194 320 373

FABRIC AJ.—A moderately heavy duck used in the manufacture of stitched canvas belts. The warp threads are 6 ply 26 per inch and the filling 5 ply 16 per inch. Bone-dry the canvas weighed 27.5 oz. per sq. yd. and, at 6 per cent regain, 29.1 ounces.

Moisture, per cent..... 0..... 4.76 6.87 10.88

Average tensile strength, pounds..... 194 320 373

FABRIC AK.—A moderately heavy duck used in the manufacture of stitched canvas belts. The warp threads are 6 ply 26 per inch and the filling 5 ply 16 per inch. Bone-dry the canvas weighed 27.5 oz. per sq. yd. and, at 6 per cent regain, 29.1 ounces.

Moisture, per cent..... 0..... 4.76 6.87 10.88

Average tensile strength, pounds..... 194 320 373

FABRIC AL.—A moderately heavy duck used in the manufacture of stitched canvas belts. The warp threads are 6 ply 26 per inch and the filling 5 ply 16 per inch. Bone-dry the canvas weighed 27.5 oz. per sq. yd. and, at 6 per cent regain, 29.1 ounces.

Moisture, per cent..... 0..... 4.76 6.87 10.88

Average tensile strength, pounds..... 194 320 373

FABRIC AM.—A moderately heavy duck used in the manufacture of stitched canvas belts. The warp threads are 6 ply 26 per inch and the filling 5 ply 16 per inch. Bone-dry the canvas weighed 27.5 oz. per sq. yd. and, at 6 per cent regain, 29.1 ounces.

Moisture, per cent..... 0..... 4.76 6.87 10.88

Average tensile strength, pounds..... 194 320 373

FABRIC AN.—A moderately heavy duck used in the manufacture of stitched canvas belts. The warp threads are 6 ply 26 per inch and the filling 5 ply 16 per inch. Bone-dry the canvas weighed 27.5 oz. per sq. yd. and, at 6 per cent regain, 29.1 ounces.

Moisture, per cent..... 0..... 4.76 6.87 10.88

Average tensile strength, pounds..... 194 320 373

FABRIC AO.—A moderately heavy duck used in the manufacture of stitched canvas belts. The warp threads are 6 ply 26 per inch and the filling 5 ply 16 per inch. Bone-dry the canvas weighed 27.5 oz. per sq. yd. and, at 6 per cent regain, 29.1 ounces.

Moisture, per cent..... 0..... 4.76 6.87 10.88

Average tensile strength, pounds..... 194 320 373

FABRIC AP.—A moderately heavy duck used in the manufacture of stitched canvas belts. The warp threads are 6 ply 26 per inch and the filling 5 ply 16 per inch. Bone-dry the canvas weighed 27.5 oz. per sq. yd. and, at 6 per cent regain, 29.1 ounces.

TABLE II.—"CORRECTED" RATES OF STRENGTH INCREASE.

Fabric	Weight at 6 Per Cent Regain, Oz. Per Sq. Yd.	Correction Rate.
A—Cheese cloth	1.54	0.57
B—Osburg	8.10	3.09
C—Wing fabric	4.00	1.48
D—Sheeting	5.48	2.03
E—Osburg	8.60	3.18
F—Tire fabric	17.3	6.40
G—Belt duck	29.1	10.77
H—Heavy duck	49.34	18.26

FABRIC H.—A very heavy closely woven canvas. There were 19 threads per inch in the warp, 13 ply. The filling was made up of 15 threads per inch, 14 ply. Bone dry the canvas weighed 46.55 ounces per square yard and, at 6 per cent regain, 49.34 ounces.

Moisture, per cent.	0	5.28	8.22
Average tensile strength, pounds.	204	381	491

The straight line plots in Figure 1 show that the strength increase in every case is fairly uniform and at the rates indicated in Table I.

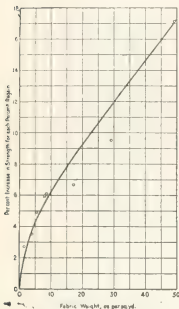


FIG. 2.—RATE OF INCREASE IN TENSILE STRENGTH WITH REGAIN TO WEIGHT OF FABRIC.

The plot of Figure 2 shows the rate of increase in relation to the weight of the fabric. Any expression or formula, therefore, to be used to correct apparent strengths for the moisture present must embody the weight of the fabric. The rate of increase in strength runs by approximately a straight line from 2.69 per cent for 1.54-ounce fabrics to 17.12 per cent for 49.34-ounce duck. The rate of this increase is very nearly 0.37 per cent per ounce of fabric weight.

Therefore, there is for every weight of fabric a "correction rate" equal to 0.37 multiplied by its ordinary weight in ounces per square yard. For the fabrics given above this will be as shown in Table II.

Thus to correct any cotton fabric for moisture present and

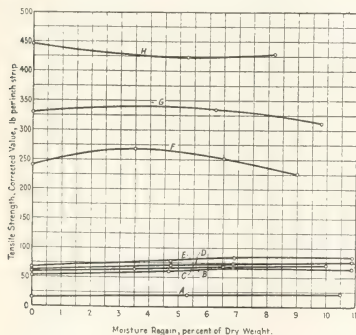


FIG. 3. TENSILE STRENGTH OF FABRICS CORRECTED FOR MOISTURE.

bring it to a condition of 6½ per cent standard regain, would require the use of a formula such as:

Tensile Strength Corrected to Standard Moisture Regain of 6½ per cent =
Tensile Strength from Machine Reading $\times [100 + (\text{Rate} \times 6.5)]$

$$100 + (\text{Rate} \times \text{Actual Regain at Test})$$

If the above formula be applied to all the preceding tests the plot of Figure 3 will be the result. This indicates a fair degree of uniformity in the results whatever the moisture content may be.

STEAM HOSE FOR CAR HEATING.

AT THE RECENT MEETING of the American Society for Testing Materials at Atlantic City, a paper on steam hose for car heating was presented by H. J. Force. The author describes briefly a method of manufacture for steam hose which will neither contract nor expand in service. He said:

When made from duck alone, steam hose has been found to contract to such an extent in service that in some cases it becomes uncoupled when passing around a short curve.

Again, the failure of steam hose in many cases has been traced directly to the excessive expansion which takes place after the hose has been in service for some time. This expansion frequently results in the hose blowing off from the coupling, requiring the use of a special clamp to hold the hose on the coupling.

After making a series of tests, it was decided to build a hose of duck with a heavy friction, and then one or more layers of braiding. If made from duck alone, hose will expand excessively. It is impracticable to make it from braiding alone, but with a combination of duck and braiding a very satisfactory grade of steam hose can be produced which will show no contraction in length and no expansion in diameter under the most severe service conditions.

Four constructions of hose were tested, each, however, with two plies of braiding over the duck plies with intervening rubber layers for anchoring the braiding. All hose was steamed to bursting, ten hours a day at 60 pounds pressure. Under this test one series of hose showed an average life in eight samples of 960 hours, the minimum being 700 and maximum 1,535 hours. In this series the number of plies of duck was increased from two to three, and this apparently had the effect of nearly doubling the life of the hose.

The detailed construction was as follows: Tube, regular specification steam hose 5/32-inch thick: 3 ply, 23 ounces per square yard with heavy coat of special steam-resisting friction; first ply of gum to anchor braiding, 1/16-inch thick, regular specification, steam-resisting; first ply of braiding, number 8/3 yarn in 5 by 5 strands; second ply of gum to anchor braiding, 1/32-inch thick, regular specification, steam-resisting; second ply of braiding same as the first ply; outside cover, 1/32-inch thick, regular specification, steam-resisting.

The author concludes:

1. That steam hose should be made of a composition of duck and braid.
2. That machine-made tubes should not be used, and that tubing of three-ply calender should in every case be used in hose to be subjected to any considerable temperature.

J. P. DEVINE CO. PLANT ADDITIONS.

Increased business during the past four years has compelled the J. P. Devine Co., manufacturer of vacuum-drying and evaporating apparatus and chemical apparatus, to build several additions to its great plant at Buffalo, New York. One of these, constructed of steel and brick with the most improved light and ventilating system, 30 by 100 feet, and just completed, houses the vacuum-pump assembly department; another, 90 by 100 feet, of the same material and general plan, in course of construction, enlarges the general assembling department. The foundations have been laid and the steel construction is proceeding for a third addition, a new foundry, 90 by 225 feet, equipped throughout with new machinery, giving greatly increased facilities for casting large commercial units. The total investment represented in these plant additions when fully equipped will amount to \$200,000.

What the Rubber Chemists Are Doing.

QUANTITATIVE TESTING OF RAIN-PROOF AND WATERPROOF CLOTH.

THE AUTHORS, Geoffrey Martin and James Wood, preface their paper by noting that the tests given are all well known in the trade, but as not much appears to have been published on the subject the methods described may be of interest to chemists who are called upon to examine cloth in regard to its waterproof quality.

Among the chief waterproofing processes may be mentioned the following:

1. With aluminum acetate. The fabric is immersed in a solution of aluminum acetate, squeezed and dried, aluminum oxide being deposited in the fiber. Fabrics thus waterproofed are porous and permeable to air. They are not strictly waterproof, and consequently are sometimes described as shower-proof or rainproof.
2. With gelatine, glue, isinglass, casein, etc., followed by treatment with a solution of alum, tannin, etc. Here again the goods are usually not absolutely impermeable to water.
3. With paraffine and other waxes. Articles treated in this way are usually impermeable to water.
4. With india rubber.
5. With oil. A mixture of raw and boiled linseed oil mixed with coloring matter, resin and other materials is spread in thin layers on the fabric, which is dried between successive applications. Oiled silks, oil-skins, etc., impervious to water and air, are thus prepared.
6. With ammoniacal cupric oxide. The "Wellesden" fabrics are waterproofed by this process.

DETERMINATION OF WATERPROOF VALUE.

THE DROP TEST. This is the War Office test and is especially valuable in that it furnishes a fairly-accurate numerical value of the degree of waterproofing. It reproduces more or less exactly the actual conditions to which a cloth is subjected in practice, imitating the natural fall of rain.

The method of carrying out the test is shown in the illustration. The sheet of cloth to be tested is laid upon a sheet of white blotting paper which in turn rests upon a sheet of plate glass, supported by a frame at an angle of 45 degrees. The cloth and blotting paper are fixed in position by strips of lead about an inch wide, bent at the end and laid over the cloth. Beneath the plate glass is a horizontal mirror.

Water is dropped from the burette onto the cloth about five feet below. By means of the cock the flow of the water is kept at 20 drops per minute. This is continued until the water passes through the waterproofed cloth and stains the blotting paper below. By viewing through the mirror from behind, the exact moment at which the stain appears can be determined and the number of drops required to produce this result is noted.

There is a considerable variation between the minimum and maximum number of drops required for penetration, but the average for a set of tests (20 trials per one half square foot) seems characteristic for any given piece of cloth. To pass the War Office test, an average of 60 drops is required. This is

considerably in excess of that usually needed in civilian garments.

The drop test is repeated on samples of the same cloth after each of the following treatments:

1. The cloth should be rinsed three or four times in cold water, dried, and tested again. A more severe test is to soak the cloth in cold water for 24 hours, dry, and then again test. A properly waterproofed cloth should not show much variation when treated in this manner.
2. The cloth should be covered with a damp cloth, ironed, and again be subjected to the drop test. It is still better to blow steam through it. The object of this test is to be sure that the waterproofing is of such nature as to resist the treatment to which the cloth will be subjected in the tailor's hands.

FABRICS PROOFED WITH RUBBER.

In the case of fabrics proofed with india rubber, the War Office specifies the composition of the proofing material. Thus, the material for proofing coats with vulcanized india rubber mixings must contain: mineral matter, not more than 41 per cent; sulphur not more than three per cent; india rubber not less than 56 per cent on the average, and no single coat may contain less than 54 per cent.

In the case of cyclists' waterproof capes, a different composition may be used for the proofing. The mineral matter must not exceed 52 per cent, sulphur three per cent (the free sulphur in this to be not more than one per cent). The rubber must not be less than 45 per cent on the average, and no single garment may contain less than 43 per cent. Civilian garments may consist of different qualities from these, which represent a very high class of waterproofing.

ANALYSIS OF RUBBER PROOFING.

MINERAL MATTER. A part of the sample is ignited and the weight of ash determined. Due corrections are made for oxidation to sulphates. When antimony sulphide and copper are present these should be estimated in the usual way. The mineral matter used for coloring the proofing of cyclists' capes usually consists of zinc oxide and litharge. Small additions of other ingredients such as are generally recognized as having a beneficial influence are officially recognized. The presence of calcium carbonate and magnesium carbonate is often prohibited in War Office contracts.

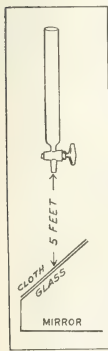
Sulphur is estimated in the usual way as barium sulphate, oxidation being generally effected by nitric acid and potassium chlorate. From a determination of the amount of antimony and other metals present as sulphide in the preliminary operation, a correction for the amount of sulphur combined with antimony and other metals can be made.

Free sulphur is regarded as the sulphur extracted by boiling acetone. The substance is extracted by boiling acetone for about one hour, the acetone evaporated, the residue oxidized, and the amount of free sulphur determined as barium sulphate.

Organic matter extracted by acetone is the difference between total acetone extract and free sulphur.

ALCOHOLIC POTASH EXTRACT. The amount of organic matter dissolved by boiling the acetone-extracted sample with alcoholic potash is estimated as follows:

The acetone-extracted rubber is dried and boiled for eight hours with a solution of alcoholic potash (56 grains caustic potash in 500 cc. of alcohol). The solution is poured into a dish, the rubber washed twice with alcohol and boiled two or three times with water, the washings added, and the alcohol distilled off and recovered. The residue is evaporated, washed into a separating funnel, acidified with hydrochloric acid, and the fatty acids extracted with successive portions of ether. The ether is



DROP TEST FOR
WATERPROOF
FABRICS.

¹ "Journal of the Society of Chemical Industry," April 15, 1918, page 84T.

distilled off and the residue dried to constant weight in the water oven.

The rubber residue left after boiling with alcoholic potash is washed free from potash by water, dried to constant weight in the water oven, and cooled in *vacuo*. The ash and sulphur in the dried residue are then estimated and thence the weight of organic matter in the residue is calculated. This weight is deducted from the weight of organic matter in the residue after extraction with acetone (obtained by deduction of ash and combined sulphur) and from the difference the loss of organic matter by extraction with alcoholic potash per 100 parts of rubber is calculated.

The india-rubber proofing should be free from grit and large size particles. In the case of capes a three-inch square of material should have at least 0.13 grams of proofing between the two fabrics

THIOGEN PROCESS OF MAKING SULPHUR.

The thioген process of making sulphur consists essentially in the treatment of sulphur dioxide gas, from any source, with a hydrocarbon gas in the presence of a basic sulphide catalytic material. Any form of hydrocarbon gas or reducing gas may be used, the result in any case being sulphur vapor, carbon dioxide and water vapor. The so-called wet thioген process was tried out under the direct supervision of the United States Bureau of Mines in 1915, and the results published in Bulletin 113 of that Bureau.

In brief, it was determined that sulphur could undoubtedly be produced by this process at an estimated cost of about \$12 per ton. By adaptation of modern commercial practice in the concentration of the sulphur-dioxide gas from weaker gases, before reducing this gas to elemental sulphur, by the action of the reducing gases not only is the size of the installation for a given capacity very much reduced but the oxygen content of the gas is entirely removed, thereby effecting a great reduction in the amount of reducing material necessary.

Under the most favorable conditions the cost of producing sulphur by the improved process is now estimated at \$5 per ton.

DETERMINATION OF SULPHUR IN VULCANIZED RUBBER.

The following method for determining sulphur in vulcanized rubber, by H. P. Stevens, is abstracted from "The Analyst," volume 43 (1918), page 377.

About 0.5 grams of the sample is digested with 20 cc. of nitric acid (specific gravity 1.42) and 0.5 grams of potassium chlorate. The liquid is then boiled for two or three hours beneath a reflux condenser, subsequently evaporated to dryness in a dish after the addition of three grams of pure magnesium nitrate. The residue is cautiously heated over a flame, the presence of the magnesium salt moderating the combustion, and any unburnt carbon is destroyed by digestion with nitric acid and potassium chlorate, and the excess of acid evaporated.

After the addition of 10 cc. of strong hydrochloric acid, the dish is covered with a watch glass and gently heated until red fumes cease to appear. The liquid is then diluted, filtered, made up to 300 cc., and heated to boiling on a hot plate. The sulphuric acid is precipitated by the addition of 5 cc. of ten per cent barium chloride solution, and the precipitate allowed to stand over night before filtration.

BRITISH USE OF NITER CAKE IN RUBBER RECLAMATION.

The following information on the use of niter cake in reclaiming unvulcanized rubber is derived from a report by Consul Ross E. Holaday, Manchester, England, in "Commerce Reports" (March 15, 1919).

In reclaiming unvulcanized waste rubber by the acid process a solution is made up by dissolving niter cake in hot water, which gives about a ten per cent content of sulphuric acid. As it is

necessary to have a 15 to 20 per cent solution of sulphuric acid, Manchester reclaimers bring this up to strength by using commercial sulphuric acid. In this way they are enabled to use about 50 per cent niter cake in the treatment of waste rubber by the acid process.

During the war sulphuric acid was available for use in England only on a permit issued by the Ministry of Munitions and it was not possible to use a straight sulphuric acid solution without the use of niter cake. By careful handling and thorough washing it has been found that niter cake can be used with a considerable degree of safety.

WATERPROOFING DRAWINGS.

For the purpose of rendering drawings waterproof to be used in damp localities, mines, etc., J. S. Carpenter recommends in "Engineering News," September 20, 1918, a solution of pure unvulcanized caoutchouc in benzene. The solution is diluted sufficiently with benzene to yield a thin liquid that will spread well under a brush. With this liquid the drawing is coated on both sides. A thicker solution or cement of crude rubber is used to stick together parts of large drawings. The same solution may also be used for cleaning soiled drawings, the deposited film of rubber being rolled up and used as an eraser.

SYNTHETIC CAOUTCHOUC.

The "Journal of the Society of Chemical Industry," March 31, 1919, gives the following abstract of an article by C. Duisberg, in the "Elektrochemische Zeitschrift" ("Electrochemical Journal"), 1918, volume 24, pages 369-372.

Synthetic rubber from dimethylbutadiene (methylisoprene) as first made on a commercial scale was very susceptible to oxidation and combined very slowly with sulphur. These difficulties were overcome by the addition of organic bases (especially piperidine and similar substances, and in this way hard rubber equal in strength to that made from natural rubber and with an electrical resistance about 20 per cent higher, has been made.

The production of soft vulcanized rubber from the synthetic product has not been equally successful. Leather-like products are usually obtained and although the elasticity can be improved by addition of dimethylaniline and other substances, the material does not work well on the rolls, does not vulcanize satisfactorily, and is inferior in "nerve" to vulcanized rubber made from the natural product.

CHEMICAL PATENTS. THE UNITED STATES.

LEATHER SUBSTITUTES. A permanently fibrous substitute for leather, comprising a short length fiber, selected sheet Ceylon rubber, gum Concho, Pontianak, magnesia, red oxide of iron, and sulphur, the whole being vulcanized. (John D. Prince, Boston, Massachusetts. United States patent No. 1,305,621.)

PHENOLIC CONDENSATION PRODUCT AND PROCESS. A fusible product of para-cresol and a substance containing a mobile methylene group. The product fuses at temperature above 115 degrees C. (Leo H. Bakeland, Yonkers, New York, assignor to General Bakelite Co., New York City. United States patent No. 1,306,681.)

PROCESS FOR TREATING LATEX AND PRODUCT. The process comprises rendering the nitrogenous matter contained in a mass of latex insoluble, subjecting the mass to vacuum evaporation and adding a vulcanizing agent. (Edward Mark Slocum, Medan, Sumatra, Dutch East Indies, assignor to General Rubber Co., New York City. United States patent No. 1,306,838.)

METHOD OF WATERPROOFING FABRICS. Textile fabrics and wearing apparel are treated with paraffine wax in conjunction with petrolatum and a selenium-treated Chinese wood oil. (Herbert P. Pearson, assignor to Pearson Products Corporation, both of New York City. United States patent No. 1,307,373.)

THE DOMINION OF CANADA.

LEATHER SUBSTITUTE AND PROCESS. This consists in forming a matted fiber sheet, saturating and combining with it a binding agent composed of rubber, balata, fish glue, silicate of soda, sulphur and linseed oil, drying the sheet and compressing it. (Roland B. Respass, New York City. Canadian patent No. 191,418.)

RUBBER SUBSTITUTE AND PROCESS. Glutinated vegetable proteid substances are treated with a phenol, an oxidizing oil, an active methylene compound and an alkali, and the mass finally vulcanized. (Sadakichi Satow, Tokio, Japan. Canadian patent No. 191,428.)

THE UNITED KINGDOM.

RECLAIMING RUBBER. Rubber waste is finely ground and mixed with a rubber solution in the proportion of $2\frac{1}{2}$ to 3 pounds of new rubber to each hundred of old, the solvent being gasoline or carbon tetrachloride. The mass is reground, after which the solvent and any contained moisture are removed as far as possible, the temperature being kept below the vulcanizing point, employing a partial vacuum if necessary. Molding and vulcanization are effected with or without the addition of sulphur which, when employed, is preferably dissolved in the rubber solvent. (J. Porzel, 199 Glenwood avenue, Buffalo, New York. British patent No. 124,887.)

COMPOSITION FOR COATING FABRICS. This consists of rubber and aluminum hydrates, with or without other ingredients, forming a non-inflammable coating. Example of proportions: 25 parts rubber, 60 parts aluminum hydrate, 7 parts asbestos, $1\frac{1}{2}$ to 6 parts litharge and 1 part sulphur. This mixture is softened in coal-tar naphtha and used to coat fabric which may be first treated to render it fireproof, and the coating may be first treated in a steam vulcanizer. (W. H. Perkin, Waynflete; J. H. Mandelberg and J. Mandelberg & Co., Pendleton, Manchester. British patent No. 125,622.)

VULCANIZING ACCELERATOR. Caustic alkali is dissolved in an organic compound (other than glycerol or glycol) of predominant hydroxylic character, such as butyl or amyl alcohol or phenol. The compounds in question are limited to those that are fluid at the ordinary temperatures or are fusible at about 120 degrees C. (Dunlop Rubber Co., 14 Regent street, Westminster, and D. F. Twiss, Royal road, Sutton, Coldfield. British patent No. 125,696.)

THE REPUBLIC OF FRANCE.

ACCELERATORS. New agents for accelerating the vulcanization of caoutchouc and method of their production. (S. J. Peachey, Heaton, Mersey, near Manchester, England. French patent No. 490,897.)

HOLLAND.

ACCELERATING VULCANIZATION OF RUBBER. Para-nitrosodimethylaniline is added as the accelerating agent. (S. J. Peachey, Heaton, Mersey, near Manchester, England. Holland patent No. 2,829, March 15, 1919.)

OTHER CHEMICAL PATENTS.

THE UNITED KINGDOM.

APPENDIX TO ABRIDGMENTS OF SPECIFICATIONS (1915).

- N** O. 5,915. The incorporation of coloring matter in solution with the rubber of balloon fabrics to guard against deleterious action by actinic rays of light. (Not yet accepted.) R. Wheatley and North British Rubber Co., Castle Mills, Fountainbridge, Edinburgh.
- 13,689. The coloring of one or more of the intermediate plies as well as the outer one of the gas-tight membrane of a balloon fabric to guard against the deleterious action of light. (Not yet accepted.) W. A. Williams and North British Rubber Co., Castle Mills, Fountainbridge, Edinburgh.
- 13,690. A compound fabric for balloons of the type described in Specification 7130/03, consisting of two or more plies of similarly dyed material of identical weave and yarns. (Not yet accepted.) W. A. Williams and North British Rubber Co., Castle Mills, Fountainbridge, Edinburgh.

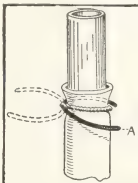
LABORATORY APPARATUS.

INSURING TIGHT CONNECTIONS BETWEEN GLASS AND RUBBER TUBING.

A SIMPLE AND EFFECTIVE DEVICE for insuring tight connections between glass and rubber tubing is described by C. C. Keppeler in "The Journal of Industrial and Engineering Chemistry,"

August, 1918, page 631.

The device illustrated permits the use of oversize rubber tubing, and insures gas- and water-tight joints. It has been used throughout the year with Liebig condensers and gas apparatus and given complete satisfaction. A is a piece of stout wire bent in U form of such size that the limbs of the U will just slip over both tubes. A loop of stout cord is tied about the connection, the wire U is slipped through this loop as shown by dotted lines, the cord is twisted, using the wire as a lever, and as soon as the joint is tight, the U is



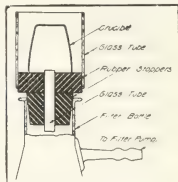
CONNECTION BETWEEN GLASS AND RUBBER TUBING.

turned as shown at A.

Cord is better than copper wire for this purpose because it distributes the force more uniformly throughout its length. This mode of attachment may be dismantled without pliers or other tools.

CLEANSING FILTER CRUCIBLES.

An effective method of cleansing alundum filtering crucibles by reverse washing is clearly shown in the accompanying illustration for which we are indebted to the Norton Company, Worcester, Massachusetts.



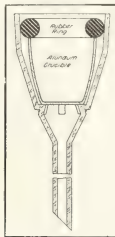
FILTER CRUCIBLE CLEANSING.

for which we are indebted to the Norton Company, Worcester, Massachusetts.

FILTERING CRUCIBLE.

Alundum filtering devices are especially adapted to routine laboratory work where suction is available because of the rapidity with which filtration can be made. They will hold the finest precipitated substance and are particularly adapted to organic work where they need only to be heated over a burner to be cleansed. In addition to the usual forms of crucibles, cones, and dishes, alundum filters are made in special shapes, such as disks, plates, tubes, etc.

A novel and effective way of supporting a filtering crucible so that the entire filtering area is acted upon by the suction is shown in the illustration. The apparatus was designed and used first by G. L. Spencer of the Cuban-American Sugar Co. (Norton Co., Worcester, Massachusetts.)



FILTERING DEVICE.

COMPOUND FOR FROSTING AND ETCHING GLASS.

Diffusilene is the name given to a new liquid compound which imparts a smooth satin-like frosted finish to glass surfaces. The glass becomes uniformly and permanently etched wherever the liquid is applied, complete chemical action taking place in about three minutes. It is applied by dipping or by brush and is practically harmless to hands or clothing. (Standard Scientific Co., 70 Fifth avenue, New York City.)

"CRUDE RUBBER AND COMPOUNDING INGREDIENTS" and "RUBBER MACHINERY," by Henry C. Pearson, should be in the library of every progressive rubber man.

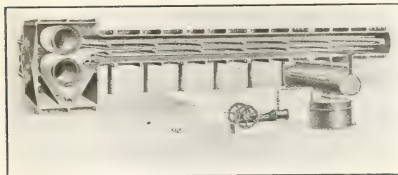
New Machines and Appliances.

VACUUM-DRYING, IMPREGNATING, AND SOLVENT RECOVERY APPARATUS.

THIS APPARATUS has been specially designed for impregnating tire fabrics, belting and hose duck, and other fabrics; drying after impregnating, and recovery of the volatile solvent employed.

The complete operation takes place under vacuum. The material is first dried by passing it from the top roller to the bottom roller between the heating tables. The solvent is then admitted to the chamber and thoroughly impregnates the material owing to the air having been entirely expelled. The material is then rewound on to the top roller, passing between rollers to squeeze out surplus solvent, and afterwards between the heating tables to thoroughly dry it.

The vapor from the drying chamber is drawn through a



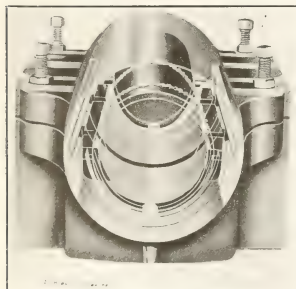
MACHINE FOR VACUUM-DRYING AND SOLVENT RECOVERY.

multitubular condenser by means of a vacuum pump, and the condensed solvent is collected in the receiver.

Details of construction vary according to the materials to be treated, and the solvent used. (Francis Shaw & Co., Limited, Bradford, Manchester, England.)

OIL-WIPER FOR SELF-OILING BEARINGS.

The use of an efficient oil-wiper on bearings, particularly heavy ones, results in a saving of oil, labor and machinery repairs. Such devices are well adapted to rubber mill practice.



OIL-WIPER FOR BEARINGS.

tended to a convenient point in the groove at the end of the bearing or to the housing at the end of the bearing. There is a wiper placed at each end of the bearing.

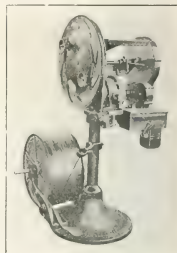
The wiper of novel construction here shown consists of a tempered steel spring with a triangular-shaped piece of Babbitt metal mounted on the end. This piece of Babbitt metal is shaped to the shaft and wipes the shaft clean and returns the oil to the reservoir of the bearing. The spring is fast-

These wipers are equally useful for all self-oiling bearings, whether plain, roller or ball. It is said that on a test run of four months on ten bearings, each transmitting 250 horsepower, one gallon of oil was required for replacement on all ten bearings. (Industrial Products Co., 1024 Penobscot Building, Detroit, Michigan.)

BEAD-MAKING MACHINE.

The growing popularity of straight-side tires has stimulated the invention of labor-saving machinery to meet the tire manufacturers' requirements. The inextensible beads used on all straight-side tires are built up on an annular wire core, and the machine shown in the accompanying illustration is especially designed for the purpose of making this bead-core.

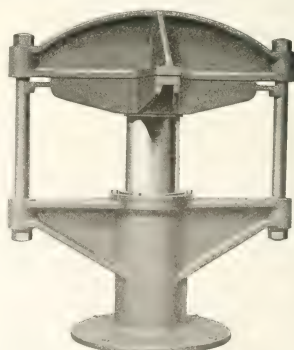
The wire is fed from a stock-reel to an expansion-head, whereby any size of bead from 31 by 4 inches to 38 by 5½ inches may be formed. The machine is equipped with a direct motor-drive and starting switch. (Gillette Rubber Co., Eau Claire, Wisconsin.)



WIRE-BEAD MACHINE.

THE W-S-M HYDRAULIC RIMMING-PRESS.

ACCORDING to the old method used in the manufacture of cord tires, the air-bag rings were drawn together by hand-operated bolts that held them together—a very tedious process.



PRESS FOR SETTING AIR-BAG RINGS.

are of heavy semi-steel and the cylinder and base are cast in one piece. The cylinder is outside packed with a U-leather ring-packing having a flax core and held in place by a gland which can be easily removed.

The ram cap or lower platen and the upper platen are spider-shaped to enable the operator to tighten up the bolts on the rings easily after they have been forced together. The upper

The demand for a small but simple press for doing this work has resulted in the machine here illustrated. By using this press the rings are quickly brought together ready to receive the bolts, no mechanical knowledge being necessary.

The cylinder, ram, and platens

platen is supported on heavy steel rods and acts as the upper frame of the press.

The distance in the clear between platens when the lower one is down is 14 inches, while between the rods it is 45¼ inches. (The Wellman-Seaver-Morgan Co., Cleveland, Ohio.)

HIGH-DUTY BELT-FASTENERS.

The requirements of conveyor service, elevator belts and heavy transmission duty at moderate speeds have been considered in the design of this belt fastener. It gives an evenly balanced joint

of exceptional tensile strength, combined with smoothness on both sides.

The squared ends of the belt are butted tightly together and the required number of top

plates, with the round holes, are spaced evenly across the belt with approximately one-half inch between each plate, and the bolt holes marked and punched one-sixteenth inch back from the corresponding marked positions on the belt.

The square-seated plates are placed on the pulley side and the square-head bolts inserted in the holes, the round countersunk plate being used on the reverse side to receive the special cone-shaped nuts.

After the parts are properly assembled the nuts are screwed down tightly and evenly with a special socket wrench. After a few days the nuts should again be tightened. The bolt ends on conveyor belts should be cut off and the ends smoothed down. (Flexible Steel Lacing Co., 522 South Clinton street, Chicago, Illinois.)

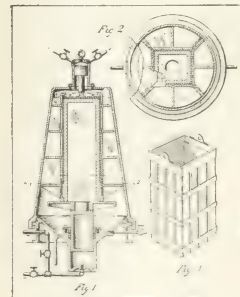
MACHINERY PATENTS.

BATTERY-JAR PRESS-VULCANIZERS.

THIS MACHINE exerts pressure simultaneously and in all directions upon the several faces of the battery-jar being molded, which is afterwards cured in the same machine. Referring to the illustrations, Fig. 1

is a vertical sectional view. Fig. 2 is a horizontal sectional section on the line 2-2 of Fig. 1. Fig. 3 is one of the battery jars produced on this machine.

The operation is as follows: the cover is hoisted up and the cylinder discharged so that the ram and platen are in their lowest position. The mandrel is placed upon the platen and the sheets of unvulcanized compound are assembled upon the four sides and top of the mandrel together with the four side



BATTERY-JAR MOLDING AND VULCANIZING PRESS.

plates and the top plate of the outer mold. The bell-shaped cover is then lowered and locked to the base. The waste pipe of the cylinder is left open so that the piston may be pushed up by the rising mold.

Pressure is then turned into the cylinder and the platen with the mold thereon is elevated, the result being that a heavy molding pressure is exerted, causing the edges, sides and bottom

walls of the battery-jar to be fully compacted and molded. Steam is then turned into the interior of the vulcanizing chamber and, circulating around the mold, vulcanizes the jar. (John R. Gammeter, Akron, Ohio, assignor to The B. F. Goodrich Co., New York City, United States patent No. 1,306,001.)

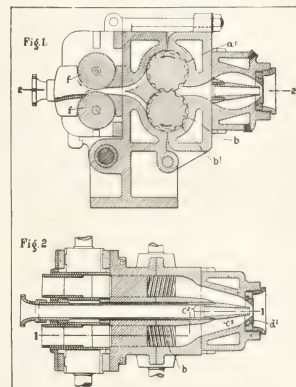
A TUBING MACHINE OF NEW DESIGN.

A tubing machine of novel design is shown here, Figure 1 being a sectional elevation on the line 1-1 of Figure 2 and Figure 2 is a sectional plan on the line 2-2 of Figure 1.

The method of operation is as follows:

The extrusion rollers *b* and the feed rollers *f* are revolved in the directions indicated by the arrows in Figure 1. The rubber which it is desired to extrude is first formed into strips of a suitable width and thickness to introduce between the feed rollers *f*.

By means of the adjusting screw the feed rollers are adjusted so as to pass forward a sufficient quantity of material to fill entirely the spaces between the teeth *b'*



A BRITISH TUBER.

of the rollers *b*.

As the extrusion rollers revolve the material is carried around the periphery of the rollers until it reaches the point at which the teeth *b'* interlock.

The teeth are so shaped that the material is then forced out of the spaces in a thoroughly masticated condition, and it is thus deposited in and forced along the extrusion chamber and through the extrusion opening between the core *c'* and the die *d'* on to the cable which is drawn through the sleeve *e'* in the ordinary way. (John Stratton of Bowden and Ernest Alexander Claremont of High Legh, England. United States patent No. 1,302,484.)

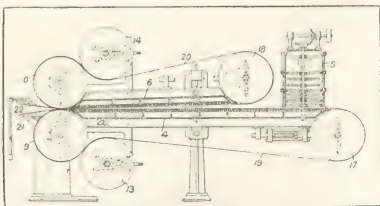
RUBBER SHEET-FORMING AND CURING APPARATUS.

Vulcanized rubber sheets are produced by pressure between converging travelling metal belts which are progressively steam-heated so that the temperature is increased until the vulcanization point is reached near the delivery end of the bands.

The belts 19, 20 are carried by vertically adjustable power-driven rollers 9, 10 and by idler rollers 17, 18 capable of both vertical and horizontal adjustment. Positively driven pressure-rollers 13, 14 capable of horizontal adjustment are provided to engage the belts.

Below and above the belts 19, 20, respectively, are platens 4 and 6, divided into chambers which are supplied with steam through pipes controlled by hand or pressure-operated valves. Steam first enters the compartments *a* so that the temperature increases from the point at which the rubber is delivered from a vertically-adjustable spreader *S* to the delivery end of the

machine where vulcanization is effected. Weighted scrapers 21, 22 serve to free the rubber sheet from the belts. (J. Porzel, 1909)



SHEET-FORMING AND VULCANIZING MACHINE.

Glenwood avenue, Buffalo, New York. British Patent No. 124,480. See United States Patent No. 1,308,111.)

OTHER MACHINERY PATENTS.

THE UNITED STATES.

- 1,305,408. Vulcanizing apparatus. J. E. Ravor, Sherman, Tex.
1,305,474. Vulcanizing apparatus with endless series of mold sections. G. H. Lewis, assignor to The Fisk Rubber Co.—both of Chicago, Ill.
1,306,008. Repair vulcanizer. S. W. Harris, assignor to The Akron Rubber Mold & Machine Co.—both of Akron, O.
1,306,098. Tire-unwrapping machine. C. Brown, Knoxville, assignor of $\frac{1}{2}$ to both B. F. and F. J. Lively, Lenoir City—all in Tennessee.
1,306,588. Insulated-wire-stripping machine. M. C. France, Cleveland, O.
1,306,649. Apparatus for manufacturing substitute leather. E. Wertheim, New York City.
1,306,679. Apparatus for forming storage-battery containers. J. M. Ahlgren, Indianapolis, Ind.
1,307,609. Apparatus for curing tire casings. P. P. Boriglio and E. Stephenson, both of Fort Worth, Tex.
1,307,372. Tire mold. K. A. Palmer and J. C. Irvin, New York City.
1,307,453. Collapsible tire-core. E. J. Bundy, assignor to The McGraw Tire & Rubber Co.—both of East Palestine, O.
1,307,788. Apparatus and process for making asbestos gaskets. E. Nall; E. A. Nall, executors, assignor to The Goodvalley Tire & Rubber Co.—both of Akron, O.
1,307,798. Collapsible mold for retreading tires. P. M. Stephen, San Francisco, Calif.

REISSUE.

- 14,663. Rubber-curing mill. H. J. Hoyt, assignor to Morgan & Wright—both of Detroit, Mich. (Original No. 1,163,089, dated December 7, 1915.)
1,308,111. Vulcanizing machine. J. Porzel, assignor to City Trust Co.—both of Buffalo, N. Y. See British patent No. 124,888, described above.
1,308,132. Apron for plastic mixing mills. H. A. Welton and H. J. Hoyt, assignors to Morgan & Wright—all of Detroit, Mich.
1,308,292. Tire-bead-irving apparatus. G. McNell, assignor to Morgan & Wright, both of Detroit, Mich.
1,308,479. Machine for trimming rubber articles. D. R. Campbell, Boston, assignor to F. Rumrill, Newton, both in Mass.
1,308,517. Tire vulcanizer. J. K. Williams, assignor to The Williams Foundry & Machine Co.—both of Akron, O.

THE DOMINION OF CANADA.

- 190,925. Tire-building machine. E. Hopkinson, New York City, U. S. A.
190,926. Tire-building machine. E. Hopkinson, New York City, U. S. A.

THE UNITED KINGDOM.

- 124,873. Vulcanizing press. Dunlop Rubber Co., C. Macbeth, and H. Willsaw, 14 Regent street, Westminster, London.
124,998. Tire mold. E. Hopkinson, 1790 Broadway, New York City, U. S. A.
125,071. Apparatus for making cord tires. J. D. Thomson, 377 Buckingham street, Akron, O., U. S. A. (Not yet accepted.)
125,705. Calendar for rubber strips. Dunlop Rubber Co., C. Macbeth, and H. Willsaw, 14 Regent street, Manchester.

THE FRENCH REPUBLIC.

- 489,973. Improvements in apparatus for the manufacture of rubber tubing and other similar articles by compression. J. Stratton and E. A. Claremont. See United States patent No. 1,302,484, described in this issue of THE INDIA RUBBER WORLD.
20,713/487,958. First certificate of addition to patent taken out November 28, 1918, for apparatus and process for impregnating and coating fabric with balata without the use of solvents. Société L. François & Cie. See United States patent No. 1,285,105, described in THE INDIA RUBBER WORLD, February 1, 1919.

PROCESS PATENTS.

THE UNITED STATES.

- No. 1,305,801. Manufacturing pneumatic tires. E. Hopkinson, New York City.
1,306,067. Retreading tires. F. F. McEwen, assignor to S. H. Goldberg—both of Chicago, Ill.
1,308,014. Treatment of vulcanizable plastic material. R. H. Price, New York City, assignor to The Rubber Regenerating Co., Nantuxet, Conn.
1,308,579. Improved method of making pneumatic tire casings. E. H. Trumm, Akron, O.

THE DOMINION OF CANADA.

- 190,927. Manufacturing pneumatic tire casing. E. Hopkinson, New York City, U. S. A.
190,928. Manufacturing pneumatic tire casing. E. Hopkinson, New York City, U. S. A.

THE FRENCH REPUBLIC.

- 489,462. Production of artificial sole leather. E. W. Ericsson.
489,543. Waterproofing fabrics and textiles. C. Baron and F. Bonnier.
489,581. Economical process of manufacturing soles and patterns for shoes, permitting the combined use of suitable raw materials. Société Française du Cuir Armé.
489,672. Process for waterproofing, applicable to all fabrics. A. Monlong, 68 rue de la Colombe, Toulouse (Haute-Garonne).
490,170. Production of a plastic substance with textile surfacing. Société Anonyme Nouvelle l'Oyonnait.
490,382. Utilization of pneumatic tire casings for making lounging shoes of all kinds. V. C. Thénaut and L. Meliorat.

THE EWALD TIRE RETREADER.

That two worn casings, properly stapled together with the machine here pictured, will give from 1,000 to 3,000 miles of



TIRE-STAPLING MACHINE.

service, is of interest to tire dealers, repair men and tire users generally.

The operation is extremely simple. Having two worn tires of the same size, cut the treads from the best one and slip it over the other casing. Insert a staple in the holder and push it all the way down, then place the tire over the machine table, setting the gauge so that the staples will be three-eighths of an inch from the outer casing edge. A forward movement of the hand-lever forces the staple through the casings and clinches it. This operation is repeated around the tire on both sides, setting the staples about one inch apart. A three-quarter-inch reliner strip of gummed fabric is then placed over the staples and the tire is ready for the road. (Romort Manufacturing Co., Oakfield, Wisconsin.)

NEW ZEALAND RUBBER MANUFACTURING COMPANY.

The New Zealand Rubber Products, Ltd., 181 Featherston street, Wellington, New Zealand, has been formed, with a capital of £100,000, for the manufacture of various kinds of rubber goods. Samples of the rubber goods made by this company were recently shown at Auckland.

AT THE ROYAL SHOW, CARDIFF.

The India Rubber, Gutta Percha, and Telegraph Works Co., Silvertown, Essex, exhibited its pneumatic-tire-making machine in operation at the recent show of the Royal Agricultural Society at Cardiff, June 24-28, 1919.

In addition, the Palmer Tyre, Limited, was the only other tire manufacturer that exhibited. The two companies showed airplane landing-wheel tires, and motor-vehicle tires with ribbed and studded treads.

New Goods and Specialties.

BALLOON ACCESSORIES OF RUBBER.

THE EXIGENCIES OF THE WAR resulted in the development of balloons as aids to the Army and Navy in a thoroughly practical way. Concentrated effort and the application of the knowledge of rubber and its possibilities by the large rubber manufacturers, even though their aeronautical experience was limited, resulted in wonderful achievements. One of the former obstacles to the practical use of the balloon was the inability to control its movements. Modern inventive genius has overcome this in several different ways, applicable to the different types of balloon.

THE GAMMETER VALVE.

Balloons in the early days could not be better controlled because no means had been devised for regulating the supply of gas used for inflation. Hydrogen gas, the lightest known, which weighed only one-fifth as much as air, is used for inflating balloons. Great care must be taken to preserve uniform pressure. When a balloon ascends or descends and passes from one atmospheric stratum to another, the outside air pressure decreases and the hydrogen gas within the balloon expands correspondingly. Some means must be available for counterbalancing this.

In the recent war a valve was devised which accomplished this purpose. Called the Gammeter valve, from the name of the man who invented it, the device regulates automatically the pressure of gas within

the balloon, releasing enough gas to insure proper stabilization. When greater inflation is afterward required, the gas already released cannot be replaced. Resort has been made to a series of secondary balloons called balloons, constructed within the balloon proper, which are filled with air by a blower when required. These, together with the Gammeter valve, permit the regulation of ascent and descent. The accompanying illustration shows two views of the valve and the way in which it is inserted in a balloon.

AIRPLANE-WHEEL WINDSHIELD.

Rubber tires on airplane-wheels proved to be just as great a necessity as on automobiles and just as efficient but for the fact that the wheel offered a small amount of resistance to the air passing through its spokes. In these days of exact scientific calculation of ultimately important effects, even this slight resistance must be reckoned with. Accordingly, a windshield for airplane wheels was devised, shown in the lower left-hand corner of this page. This windshield is made of rubber and can be readily adjusted or removed from the wheel, as desired or required.

This shield is so constructed that the air particles glance off with as little interference as possible with the revolution of the wheel. Many of Uncle Sam's training planes, bombing machines, and reconnaissance planes were equipped with these rubber-tired wheels.

AIRPLANE BUMPER CORD.

In order to minimize the shocks of landing in an airplane, some

device was needed to provide more play or spring in the mounting of the frame-work on the axle, and this spring must be so mounted as to prevent the frame-work from touching the ground.

Experiments in this direction led to the development of bumper cord, which is now in universal use. It consists of many small strands of rubber, covered with two jackets of cotton thread woven in just the right way. The cord is very supple and

exceptionally strong. By its use, the frame-work of an airplane is practically swung to the axle, and much the same result is produced as is effected by the spring in the corresponding place in an automobile. This provides a considerable degree of safety for the aviator in neutralizing landing shocks. A photograph of a section of this cord is reproduced herewith. (The B. F. Goodrich Co., Akron, Ohio.)

COLD-PACK PROCESS JAR-RUBBERS.

Two new brands of jar rubbers intended to be used in canning fruits and vegetables by the cold-pack process have recently been produced. This process requires jar-rubbers that will withstand the effect of a considerable degree of heat and which, therefore, must be made of a high quality of rubber. One of these brands is known as the "Usco

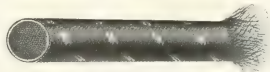
Kold Pak." (United States Rubber Co., New York City.) The other, on which the trade-mark has just been patented, is called the "AllPack." (Acme Rubber Manufacturing Co., Trenton, New Jersey.)

UNSINKABLE RUBBER MAIL-POUCH.

An aviator's mail-pouch, unsinkable and watertight has recently been put on the market. It is made of black rubberized material, with high-gravity pliable rubber composition base which keeps the pouch upright in water. A kapok lining provides buoyancy. The pouch is 16 inches high, 14 inches wide, and 3 inches deep at the base, weighing about 5 pounds. (Safety-at-Sea Corp., 1358 Broadway, New York City.)



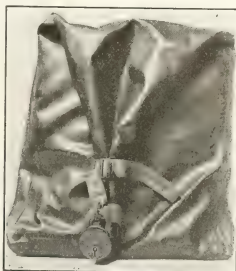
GAMMETER VALVE AND BALLOON EQUIPPED THEREWITH.



GOODRICH BUMPER CORD.



GOODRICH AIRPLANE WHEEL AND WINDSHIELD.



AVIATOR'S MAIL-POUCH.

THE "GOOD LUCK" JAR-RINGS.

In the successful preserving of fruits and vegetables, the jar-ring plays a most important part. On its ability to make and maintain a perfectly air-tight seal depends the success.



"GOOD LUCK" JAR-RINGS.

A brand of red rubber jar-rings which has a very widely extended sale, has filled every requirement and stood every test established. The rings fit the standard types of fruit-jars, are made of a high-grade compound, and are packed by the dozen in attractive cartons which are sealed air-tight before leaving the factory. The cut shows the package in which this

particular brand of jar-rings is sold. (The Boston Woven Hose & Rubber Co., Cambridge, Mass.)

A SHAVING OUTFIT "ALL-IN-ONE."

Many men who shave themselves will appreciate the shaving convenience illustrated below. A metal case contains, in one piece, a shaving brush, shaving cream, and talcum powder. The brush itself is of good quality of bristles vulcanized in rubber, having a ferrule which screws on the handle. In this ferrule is a tube which connects with the compartment next to the brush, containing soap or shaving cream, and permits the cream to pass through into the bristles. When the brush is removed, the



THE "ALL-IN-ONE" SHAVING BRUSH.

cream compartment can be filled easily. The other half of the handle is a container for talcum powder, arranged on the telescope principle in such a way that it acts as the piston for forcing the shaving cream through the tube into the brush. On the end of the powder compartment is a perforated screw-cap so shaped that the whole device may be stood upright on this cap when desired. The metal parts of the "All-in-One" shaving brush, as this novelty is called, are made of aluminum and holds sufficient material for thirty-five shaves. (All-in-One Brush Co., Bloomington, Illinois.)

AN EASILY ATTACHED RUBBER HEEL.

A new type of rubber heel has recently been put on the market which permits easy and speedy attachment. It is manufactured by modern methods necessary for the production of high-grade rubber heels.

The "Beaded Tip" rubber heel is concave-convex in shape, with a suction back and central nailing space which facilitates attachment to boots or shoes. Besides, there is a liberal allowance for trimming so that the heel may be fitted to a leather one of any shape. Distribution is through recognized jobbers. (United Lace & Braid Manufacturing Co., Providence, Rhode Island.)



"BEADED TIP" RUBBER HEEL.

AN ENGLISH DEVICE FOR WEARING FLOWERS IN THE BUTTONHOLE or on the corsage takes the form of a nipple or tiny cloth-covered rubber bottle to hold water and prevent the wet stems of flowers from coming into contact with the gown. (Rubber Growers' Assn., London.)



PAT. PNDG.
"SMOKERS."

thirty cigarettes, in two separate pockets which fold together and are held in place in convenient pocket size by a flap which snaps down with two fasteners. The case itself is made of grosgrain moire silk, in olive-drab. (Crown Suspender Co., 836 Broadway, New York City.)

A NEW CIGARETTE CASE.

A high-grade pocket-case for holding cigarettes has appeared, which has a rubber lining to protect the contents from moisture. This case, shown in the accompanying illustration, provides space for



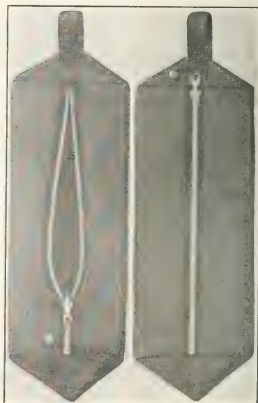
"STRAIGHT-LEG" GARTER.

A BOON FOR THE BOW-LEGGED MAN.

Somebody has recognized the predicament of the bow-legged man who, through no fault of his own, so often makes a ridiculous appearance when he most desires to look dignified and normal. A band of elastic which goes around the leg just above the knee forms the foundation for the device. From this extend downward two pieces of non-elastic tape, one attaching to the sock. The other is connected with the sock-supporting one by four strips of silver-finished tool steel, slightly weighted. When the wearer stands, the steel strips are in a horizontal position, holding out the second tape and preventing the trousers from following the curve of a bowed leg. When the wearer is running, sitting down, etc., the steel strips swing back into perpendicular position against the inner fabric strip. This prevents any bulging of the trousers. (S-L Garter Co., Dayton, Ohio.)

A BATHING BAG.

A rubberized bathing bag known as the "Jiffy-Lock," is one of the newest bathing accessories. The bag or case itself is made of double-texture rubberized fabric of heavy quality, in four sizes. The feature of the case is its fastening. This is a device on which a patent has been applied for, taking the form of two metal laces down the edges of the opening, which are opened and closed by the sliding of a cord with a convenient ball on the end. The bag comes in blue, khaki, and black and has a hand-size strap for carrying, on one end. When the case is empty it folds flat and when filled is square at the ends. (The Jiffy Lock Co., 20 West 20th street, New York City.)



"JIFFY-LOCK" BATHING BAG.

Rubber Sundries Manufacturers' Division of the Rubber Association.

AWAY BACK IN 1898 a few manufacturers of druggists' and stationers' rubber sundries met at the office of The B. F. Goodrich Co. in New York City, and discussed the possibility of forming a trade association "to bring the members of this industry into closer touch and to insure cooperation between them for their mutual benefit, upon the basis of honor and good will."

Resulting from this preliminary gathering, a meeting was held on September 9 of that year, at the Fifth Avenue Hotel in New York, at which the Rubber Sundries Manufacturers' Association was organized and the following officers were elected:

H. C. Corson, president, The B. F. Goodrich Co., Akron, Ohio; Rhodes Lockwood, vice-president, Davidson Rubber Co., Boston, Massachusetts; Fred H. Jones, treasurer, Tyer Rubber Co., Andover, Massachusetts; E. E. Huber, secretary, Eberhard Faber Rubber Co., Brooklyn, New York.

EXECUTIVE COMMITTEE: G. F. Hodgman, Hodgman Rubber Co., Tuckahoe, New York; Joseph Davol, Davol Rubber Co., Providence, Rhode Island; G. M. Allerton, The Seamless Rub-

ber Co., New Haven, Connecticut; H. C. Burton, Parker, Stearns & Sutton, Brooklyn, New York.

Such a list, was prepared, printed and distributed to the members, and was later known as the famous "Jobbers' List," which was a source of trouble from its adoption, because of the constant additions of houses which the various manufacturers deemed worthy of preferential discounts.

Another motion adopted was that members of the Association should sell goods to other members at minimum prices, subject to a courtesy discount of 5 per cent, and this was later increased to 10 per cent by common consent.

Each year an annual banquet was held in the spring. In the fall came the annual meeting, at which routine business was transacted and officers were elected. The third annual meeting, held October 3, 1901, was attended by only ten members, and owing to the apparent indifference shown by the absent members, it was deemed advisable to disband the organization.

By 1903, however, it was felt that there was need for some such association, and after some preliminary work, a meeting of sundries manufacturers was held April 3, at the Fifth Avenue Hotel, which was attended



CHARLES J. DAVOL,
Chairman.



H. A. BAUMAN,
Vice Chairman.



E. E. HUBER,



S. H. JONES,



W. H. BALCH,



W. S. DAVISON,



A. W. WARREN.

Executive Committee of the Rubber Sundries Manufacturers' Division.

ber Co., New Haven, Connecticut; H. C. Burton, Parker, Stearns & Sutton, Brooklyn, New York.

Besides these, there were present, as charter members of the Association: F. T. Carleton, Tyer Rubber Co., Andover, Massachusetts; G. F. Simpson, Ideal Rubber Co., Brooklyn, New York; G. W. Frost and James Kipp, Goodyear Rubber Co., New York City; C. Van Vliet, Goodyear's India Rubber Glove Manufacturing Co., Naugatuck, Connecticut; J. C. Hardman and J. Hardman, Riverside Rubber Co., Belleville, New Jersey; J. W. Kelley and A. T. Bell, The B. F. Goodrich Co., Akron, Ohio; H. H. Shepard, National Rubber Co., Providence, Rhode Island; R. D. Pierce, Mechanical Rubber Co., Cleveland, Ohio; W. G. Brewer, Mattson Rubber Co., Lodi, New Jersey.

At this meeting a motion was made that each member present a list of his customers which he deemed worthy of special consideration, these lists to be combined and acted upon by the

by Messrs. Burton, Hodgman, Hardman, Lockwood, Jones, Allerton and Huber, of the old association, with the following: H. E. Raymond, The B. F. Goodrich Co., Akron, Ohio; G. B. Hodgman, Hodgman Rubber Co., Tuckahoe, New York; G. W. Front, Goodyear Rubber Co., New York City, and A. C. Eggers, Goodyear's India Rubber Glove Manufacturing Co., Naugatuck, Connecticut.

A constitution was adopted, and the following officers elected: Joseph Davol, president; H. H. Shepard, vice-president; F. H. Jones, treasurer; E. E. Huber, secretary. **EXECUTIVE COMMITTEE:** G. F. Hodgman, H. E. Raymond, F. H. Jones, E. E. Menges, A. C. Burton, Joseph Davol and E. E. Huber.

Committees were appointed to prepare reports on "Dating and Cash Discounts," "Payment of Freight on Deliveries to Customers," "Inequality of List Prices," and "Indiscriminate Returns of Goods to Manufacturers."

Thus the new, or the revived association started off with important trade customs to be considered, and at subsequent meetings new questions were debated, other trade abuses eliminated, new members were admitted, and a flourishing, active, efficient association resulted.

In October, 1912, the association was incorporated under the laws of Connecticut, and the old association was dissolved at a meeting the following January. Among the important actions of the organization was the adoption of an "Official Association Guarantee to the Trade," the defeat of "House Bill No. 578," State of Georgia, requiring the stamp of date and year of manufacture on rubber goods offered for sale in that state; the standardization of invalid rings; the adoption of a credit-experience bureau; the establishment of a price exchange bureau, besides the good work of George B. Hodgman as representative of the association before the Senate Finance Committee on Tariff, whereby the tariff on druggists' sundries was reduced from 35 per cent to 15 per cent. Later actions include measures to prevent sales of sundries where it was suspected they would be smuggled into Germany, and measures taken to eliminate unnecessary sizes and styles of goods.

At the annual meeting, April 9, 1914, President Hodgman addressed the members informally, suggesting that the organization become a division of The Rubber Association of America, and at the meeting held January 13, 1915, a vote was passed to that effect, the same taking effect at the annual meeting, April 8, with Russell Parker, chairman; Charles J. Davol, vice-chairman, and H. S. Vorhis, treasurer and secretary.

Activities of The Rubber Association, Inc.

DURING THE PAST MONTH communications have been sent to firm members concerning Federal excise tax matters, standardizing catalog sizes, and a circular respecting the importation of German dyes.

FEDERAL EXCISE TAXES RELATING TO CERTAIN INDIRECT SALES.

NEW YORK, June 30, 1919.

To firm members of the Rubber Association of America, Inc.:

Under date of May 15 the following inquiry was submitted to the Commissioner of Internal Revenue:

Sales of articles mentioned in Section 900, Subdivisions 1 and 2, when made direct by the manufacturer thereof, are, in certain cases, on presentation of proper proof exempt from tax. This is true in the case of:

- (a) Sales to a state or political subdivision thereof.
- (b) Sales of parts and accessories for trailers.
- (c) Sales for export.
- (d) Sales to a manufacturer of automotive vehicles for use by him in the manufacture or production of new cars, etc.

Where, in accordance with usual established methods of distribution, the article in question, after passing through the hands of a jobber or dealer or other legitimate intermediary, reaches a class of consumers, such as a state government, or a particular use, such as an accessory for a trailer, or an ultimate disposition, such as a sale for export, should not the manufacturer of the article, having paid a tax on the sale by him, and having passed the tax on to the intermediary, be permitted, upon the receipt of proper proof of subsequent disposition, to refund to the intermediary, and in turn take credit from the government of the amount of the tax paid?

Under date of June 13 the Commissioner of Internal Revenue replied to such inquiry as follows:

Reference is made to your letter of May 15, 1919, relative to Regulations 47, relating to (a) sales to a state or political subdivision thereof; (b) sales of parts and accessories for trailers; (c) sales for export; (d) sales to a manufacturer of automotive vehicles for use by him in the manufacture or production of new cars.

This office has given very careful consideration to your suggestions with reference to modifying the afore-mentioned regulations and believes that the regulations in their present form are correct and that no further change should be made.

The tax in question is a tax on sales by the manufacturer of the article and it will be noted from the above that the exemptions of certain sales by the manufacturer from the tax apply

In each of the twenty-one years since its inception, the organization has held an annual banquet at one or another leading hotel in New York City, noted for the elegance and excellent taste shown in every detail. At these gatherings business is taboo, and rarely are outsiders invited, nor are there any prepared addresses, such remarks as are made being impromptu, and, generally, professional talent is secured for entertainment. These dinners have continued since the organization has been merged with The Rubber Association, and detailed reports of these carefully planned functions have appeared in THE INDIA RUBBER WORLD.

The present officers of the division are: C. J. Davol, chairman, Davol Rubber Co.; H. A. Bauman, vice-chairman, The B. F. Goodrich Co.; A. L. Viles, secretary and general manager, The Rubber Association of America, Inc.

EXECUTIVE COMMITTEE: C. J. Davol, Davol Rubber Co.; S. H. Jones, U. S. Rubber Co., Goodyear Glove Division; H. A. Bauman, The B. F. Goodrich Co.; W. H. Balch, Faultless Rubber Co.; E. E. Huber, Eberhard Faber Rubber Co.; A. W. Warren, Hodgman Rubber Co.; W. S. Davison, Miller Rubber Co.

The present membership is composed of the following companies: American Hard Rubber Co., Canton Rubber Co., Davol Rubber Co., Easthampton Rubber Thread Co., Empire Rubber & Tire Corp., Eberhard Faber Rubber Co., Faultless Rubber Co., The B. F. Goodrich Co., U. S. Rubber Co., Goodyear Glove Division, Hodgman Rubber Co., Miller Rubber Co., Parker, Stearns & Co., Rubber Products Co., Revere Rubber Co., Seamless Rubber Co., Tyer Rubber Co., Whitall-Tatum Co.

only in the cases where the sale is made by the manufacturer of the article. For instance, in the case of a sale by a manufacturer to a dealer, who, in turn, sells the article either

- (a) to a state or political subdivision thereof,
- (b) for use on trailers,
- (c) for export, or
- (d) to a manufacturer of automotive vehicles for use by him in the manufacture or production of new automotive vehicles,

even if such dealer furnishes the manufacturer of the articles sold proof that the dealer has so sold the article, the manufacturer of the article cannot obtain a refund or take credit for any tax paid to the Government or which has attached to the original sale by the manufacturer of the article.

THE SECRETARY.

STANDARD CATALOGS.

NEW YORK, July 3, 1919.

To firm members of The Rubber Association of America, Inc.:

This has reference to my letter of November 8, having to do with the propaganda being carried on in certain quarters, particularly by the National Association of Purchasing Agents and the National Retail Hardware Association for the adoption by commercial business organizations of a standard catalog size which would be 7 1/2 by 10 1/2 inches or its approximate half size, 5-5/16 by 7 1/2 inches.

As a matter of further information in this connection, I enclose copy of a pamphlet entitled "Underlying Principles of the National Standard Catalog Size," prepared by the Standardization Committee of the National Association of Purchasing Agents.

A. L. VILES, General Manager.

EXECUTIVE COMMITTEE MEETING

The Executive Committee met on July 11, 1919, after luncheon, at the Union League Club, New York City.

Those present were H. E. Sawyer, B. G. Work, George B. Hodgman, J. A. Lambert, W. J. Kelly and General Manager Viles.

Following the disposition of routine matters, questions of moment were discussed and definite action taken, the most important being the appointment of William C. Cox, vice-president of the Guaranty Trust Co., as treasurer of the Rubber Association.

IMPORTATION OF GERMAN DYES.

NEW YORK, July 17, 1919.

To the firm members of The Rubber Association of America, Inc.:

There has been received under date of July 15, from the War Trade Board, Washington, a copy of the enclosed circular having to do with the importation of German dyes for the use of manufacturers in this country. The War Trade Board has urgently requested that they be furnished with a list of the members of this Association who are users of dyes in order that this Board may obtain information as to their needs direct from them. It is particularly emphasized that the information thus obtained will be treated confidentially and the individual response of manufacturers will not be disclosed.

Will you not, therefore, in compliance with this request respond immediately to the advice to this office as to whether or not you are interested in the use of dyes to the end that the interests of our manufacturers in this direction may properly be taken care of.

A. L. VILES, General Manager.

FEDERAL EXCISE TAX—RECENT RULINGS—FROM THE DEPARTMENT OF INTERNAL REVENUE.

NEW YORK, July 24, 1919.

To the firm members of The Rubber Association of America, Inc.:

Under date of June 10, the Department issued additional regulations known as Treasury Decision 2860.

RECORDS TO BE KEPT BY MANUFACTURERS.

Treasury Decision 2860 provides that the person responsible for the return and payment of the tax under Section 900 of the Revenue Act shall keep such records and memoranda as will clearly show the amounts of sales of taxable articles for each month, and that the tax may be computed upon the gross amount of taxable sales during the month for which the return is made.

RESALE OF PARTS AND ACCESSORIES BY MANUFACTURER.

Treasury Decision 2860 also provides that when an automobile manufacturer prior to issuance of Regulations 47 (May 1, 1919), billed as a separate item and collected tax upon the resale of parts to dealers, and where it is impracticable to adjust the tax in accordance with Regulations 47, the total amount of the tax collected shall be paid to the tax collector. The manufacture of parts which are resold by the manufacturer of motor vehicles will be exempt from tax upon such sales, provided he has on file a certificate from the automobile manufacturer to the effect that the parts purchased by such manufacturer on or after February 25 and prior to May 1 had either been used in the manufacture of new cars or will be so used, or that the tax upon such parts therefor sold by the automobile manufacturer will be paid directly to the collector. This ruling allows the manufacturer of motor vehicles to return direct to the collector the tax on tires and parts purchased between February 25 and May 1 and resold otherwise than as original equipment by the motor vehicle manufacturer. This privilege is not extended beyond April 30.

REPAIR MATERIALS.

The Rubber Association has been advised that in a letter signed by Deputy Commissioner Walker, addressed to a member of the Association, it is held that unvulcanized sheet rubber, liquid rubber vulcanizing cement and friction fabric sold in bulk are not taxable although primarily designed for the special purpose of being used to repair tires, either as a small sectional repair or as a complete retread, and although sold to shop repair men who repair tires for car owners or who rebuild tires for owners or for resale. The sale of such articles, however, when sold in packages or containers as repair parts for tires or inner tubes for motor vehicles, is taxable. It is the interpretation of the Rubber Association that by "sales in bulk" is meant sales in such quantities as are usually made to repair men, and that by "sales in packages or containers" is meant sales in packages or containers of such sizes as are usually sold to owners of motor vehicles for repairs by them.

REFUND ON ACCOUNT OF PRICE DECLINE.

The Rubber Association is informed that in a letter of recent date signed by Commissioner Roper and addressed to a member of the Association, it is held that no credit can be taken by a manufacturer on account of a refund of tax made by him to a customer on account of a decline in the price of articles previously sold. It is stated where an article which has once been the subject of a sale and as to which the tax of 5 per cent of the sales price has been paid or is attached by operation of law, no refund or remission can be made by reason of a subsequent readjustment or reduction in the price of such articles. Several of the members of the Association have expressed a belief that the ruling does not conform to the manifest intent of the law, and that the Department will recede from this interpretation. The Rubber Association has no opinion upon

this subject, and each member should act as in his judgment is proper.

INSULATED WIRE NOT TAXABLE.

The Rubber Association is also advised that in a recent letter by the Department of Internal Revenue, it is held that the sale of insulated wire, although suitable for general wiring of motor vehicles, is not taxable. It is the opinion of the Rubber Association that this ruling is meant to apply to all insulated wire except that which is commercially known as "assembly cables." By "assembly cables" is meant an assembly of wires cut to length and bound together for use on motor vehicles. It is the opinion of the Association that the sale by the manufacturer of such wire when so cut to length and bound together, is taxable.

A. L. VILES, General Manager.

TREASURER OF THE RUBBER ASSOCIATION.

WILLIAM C. COX, the recently appointed treasurer of The Rubber Association of America, Inc., succeeding H. S. Vorhis, resigned, has been a vice-president of the Guaranty Trust Co. of New York since 1912, when the Standard Trust Co., of which he was an organizer and secretary, was merged with the Guaranty company. In July, 1918, he was commissioned a captain in the Sanitary Corps of the National Army and assumed charge of the funds at the Medical Supply Depot in New York City, a work for which his assignment to the trust department of the Guaranty organization well fitted him. After the signing of the armistice he returned to the Guaranty Trust Co. and is now located at the company's Fifth Avenue office.

The Rubber Association is fortunate in securing the services of Mr. Cox, and his appointment is in line with the larger activities of that organization, which have become such that the duties of a secretary-treasurer were too onerous.



(Cox Underwood & Underwood, N. Y.)
WILLIAM C. COX.

NEW FREIGHT RATING ON CRUDE RUBBER SHIPMENTS.

During the past eight years the official classification ratings on crude rubber shipments by rail have been in dispute, and numerous complaints against the leading railroads have lately been lodged with the Interstate Commerce Commission by The Goodyear Tire & Rubber Co., McGraw Tire & Rubber Co., Racine Auto Tire Co., La Crosse Rubber Mills Co., Kelly-Springfield Tire Co., Batavia Rubber Co., and the Northeastern Ohio Rubber Shippers' Association, an organization of fifteen rubber companies. These complaints attacked as unreasonable and unduly prejudicial the ratings of second-class, less-than-carloads, and carloads, minimum weight 36,000 pounds, and asked that ratings be established as follows: carloads, fourth class; less than carloads, third class. Later a fifth-class rating was asked on carload shipments with a minimum weight of 40,000 pounds.

The complaints were consolidated and heard upon a single record, and in the decision rendered June 2, 1919, it was found that the present second-class rating on less-than-carload shipments of crude rubber had not been shown to be unreasonable, but the railroads were ordered on or before October 15, 1919, to adopt on carload lots a rate not in excess of fourth class, with a minimum weight of 40,000 pounds.

BUY WAR SAVINGS STAMPS—BUILD FOR AMERICAN PROSPERITY and your own success.

RUBBER INDUSTRIES ATHLETIC LEAGUE.

THIS ORGANIZATION of the office employees of the rubber companies in New York City is now in a flourishing condition which promises to continue, thanks to the diligent work of its officers.

Plans for an outing are in the making and this promises to be an affair of large proportions, as some 5,000 persons are employed in the offices of New York rubber companies.

The baseball competition, however, takes first place among the activities of the League. Excellent teams have been organized by the Sterling, Kelly-Springfield, Goodyear, United States, Globe, Firestone, Goodrich and Ajax men and real progress is being made. The players are gradually becoming acquainted with inside plays and before the season is over some very interesting games will undoubtedly be played. Several of the teams have been greatly assisted by well-known ball players now in the rubber industry, notably Jack Kleinow, a former "Yankee," and Dan McEnery, a New York player, respectively coach and pitcher of the United States team, and Max Halker, former Cleveland pitcher, of the Kelly-Springfield team.

Several trophies to be presented at the end of the season to the best teams and players have been donated and will be shown in the display windows of the various member companies. The handsome sterling silver trophy cup given by THE INDIA RUBBER WORLD, which will go to the team finishing the season in first place, is shown by the accompanying illustration. It stands 19 1/4 inches in height on its ebony base and depicts the landing of Columbus in 1492 and his discovery of the Indians playing ball. A pennant will also be awarded, the gift of the Kelly-Springfield Tire Co. Another trophy cup, donated by Baker, Murray & Imbrie, Inc., will be presented to the team finishing next best. A dozen watch fobs, offered by A. G. Spalding & Bros., are to be awarded to the best twelve individual players.

Firms ship on consignment or act as forwarding agents. Very little rubber is shipped on their own account. A considerable part of the rubber exported from Corumba is received from Puerto Suarez, Bolivia.

There are no local indications that enemy firms are taking steps to extend their sphere of influence amongst the rubber gatherers. The rubber from the privately-owned plantations is obtained by the plantation owners. A small quantity is obtained from private persons who work on some plantations.

In the Brazilian district, of which Corumba is the outlet, all firms interested in the trade are Brazilian with one exception

(an Italian firm). In the Bolivian district the owners are Bolivian, British, and German.

No stock of rubber is held at Corumba; it is always shipped by the first available boat after its arrival from Cuyaba or Caceres.

Only a very small proportion of the Brazilian rubber shipped from Corumba is "Pará." Pará rubber is grown in the North of Matto Grosso, but is shipped via the Amazon.

The Brazilian shipments from Corumba are of the coagulated (smoked) variety known under the general name of "seringa" (*Hevea brasiliensis*) and sub-classified as "fina," "entrefina," and "sernamby." From 8 to 10 per cent of the total quantity shipped from Corumba is known as "mangaba."

The plantations in Brazil, of which Corumba is the outlet, are situated in the valleys of the rivers Arinos, Juruema, Tapajoz, and their many affluents. No information is available as to the localities.

PUERTO SUAREZ.

Exports of rubber from the Puerto Suarez district during the years 1912-17 have been as follows:

1912	metric tons	182
1913	metric tons	164
1914	metric tons	104
1915	metric tons	219
1916	metric tons	214
1917	metric tons	185

In Bolivia the barter system largely prevails, and the firms there have usually imported their supplies of merchandise direct from Europe or the United States. Since the institution of the Statutory List enemy firms in Bolivia have, to some extent, through subterfuge, obtained supplies from Brazil.

The Bolivian rubber shipped through Corumba consists of 90 per cent Pará and 10 per cent sernamby.

The bulk of the Bolivian rubber exported through Puerto Suarez and Corumba is grown in the Department of Santa Cruz, in the Province of Nuño de Chavez. The forests are situated about 500 miles from Suarez. ("Board of Trade Journal," London.)

When you buy W. S. S. you do not give—you receive.



INDIA RUBBER WORLD BASEBALL TROPHY CUP.

RUBBER FROM CORUMBA (BRAZIL) AND PUERTO SUAREZ (BOLIVIA).
CORUMBA.

THE BRITISH VICE-CONSUL reports that exports of rubber from the Corumba district during the years 1912-18 have been as follows:

1912	.....kilos	680,364	1915	.....	349,178
1913	.....	554,387	1916	.....kilos	418,219
1914	.....	534,213	1917	.....	291,652
	1918	.....		317,435	

News of the American Rubber Industry.

DIVIDENDS.

THE AMERICAN CHICLE Co., New York City, declared a dividend of one per cent, payable August 1, on stock of record July 21, 1919.

The Eagle-Fischer Lead Co., Chicago, Illinois, declared a quarterly dividend of one and one-half per cent, payable July 15, on preferred stock of record June 5, 1919.

The B. F. Goodrich Co., Akron, Ohio, has declared its quarterly dividend of \$1 per share, payable August 15, on stock of record August 5, 1919.

The Kelly-Springfield Tire Co., New York City, declared a quarterly cash dividend of \$1 per share and a quarterly dividend of three per cent, payable in common stock, both payable August 1, on common stock of record July 17, 1919.

The Keystone Tire and Rubber Co., Inc., New York City, has declared a stock dividend of fifteen per cent, payable September 15, on stock of record September 2, 1919.

The McLean Tire and Rubber Co., East Liverpool, Ohio, declared a dividend of two per cent, payable on preferred stock as of July 1, 1919.

The Needham Tire Co., Charles River, Massachusetts, has declared its regular semi-annual dividend of three and one-half per cent, payable August 1 on issued and outstanding preferred capital stock of record July 15, 1919.

The New Jersey Zinc Co., New York City, declared a quarterly dividend of four per cent, payable August 9, on stock of record July 31, and an extra dividend of two per cent, payable July 10, on stock of record June 30, 1919.

The Pan-American Rubber Co., Milwaukee, Wisconsin, declared a dividend of three and one-half per cent, payable in July on preferred stock of record June 30, 1919.

The Portage Rubber Co., Akron, Ohio, has declared a quarterly dividend of three per cent, payable August 15, on common stock of record August 5, 1919.

The Sewell Cushion Wheel Co., Detroit, Michigan, on June 1, 1919, declared and paid a dividend of seven per cent, on both common and preferred stock of record on that date.

The United States Rubber Co., New York City, declared a quarterly dividend of two per cent, payable July 31, on its first preferred stock of record July 15, 1919.

The van der Linde Rubber Co., Limited, Toronto, Ontario, has declared its regular semi-annual dividend of three and one-half per cent, payable August 1, 1919.

FINANCIAL NOTES.

The B. F. Goodrich Co., New York City, at a special meeting of its stockholders, held Thursday, June 26, 1919, authorized the increase of its capital stock from \$84,600,000 to \$109,600,000, the additional \$25,000,000 to consist of 7 per cent cumulative preferred stock like the present issue of outstanding preferred stock. Of this new issue, \$15,000,000, is to be offered pro rata to present stockholders, both common and preferred, at \$102 per share, plus accrued dividends at 7 per cent, dating from July 1, 1919.

The Keystone Tire and Rubber Co., Inc., New York City, has authorized the issuance of additional common capital stock of the company to stockholders of record July 21, 1919, at \$40 per share, in the ratio of one new share for each three shares already held. The company reports gross sales of \$5,570,120 for six months ended June 30, 1919, against \$3,000,672 for the same period in 1918 and \$1,658,494 in 1917. Gross business for the first half of this year is almost equal to total sales of \$6,172,291 of 1918. Before allowance for Federal taxes the net profits for the first six months of this year were \$725,935, compared with

\$442,404 for the corresponding period in 1918 and \$317,788 for 1917.

The recent offering of \$1,000,000 Hood Rubber Co. preferred stock was oversubscribed by about 25 per cent. This stock was the remainder of the \$5,000,000 preferred authorized in 1917, of which \$4,000,000 was issued in that year. The additional \$1,000,000 was recently offered to preferred stockholders at the rate of one share for every four held by them, and an opportunity was given the common stockholders to subscribe for any balance not taken by the preferred shareholders.

The New York Stock Exchange has admitted to dealings: Kelly Springfield Tire & Rubber Co. common and preferred rights and Keystone Tire & Rubber Co. rights.

The Fisk Rubber Co. of New York will redeem all of its outstanding first preferred and first preferred convertible stocks on the first day of August, 1919. Payment will be made upon said stocks at the office of the New England Trust Company, Boston, Massachusetts, at the rate of \$120 a share for the first preferred stock and at the rate of \$110 a share for the first preferred convertible stock.

There will be shortly offered \$600,000 worth of 7 per cent preferred stock of the Needham Tire Co., a Massachusetts corporation, at \$90 per share. This preferred stock is convertible into common stock at any time, par for par. The stock was offered to the public about the middle of July.

The Kelly-Springfield Tire Co., 15 Exchange Place, Jersey City, which was chartered in New Jersey in 1899, has filed a certificate at Trenton, New Jersey, showing that at a meeting of the majority of the stockholders of the concern it was decided to increase the capital stock from \$12,900,000 to \$20,900,000, of which \$3,900,300 will be 39,003 shares of 6 per cent cumulative preferred stock, par value, \$100; \$7,000,000 in 70,000 shares of 8 per cent preferred stock, par value \$100 and \$10,000,000 in 400,000 shares of common stock, par value, \$100.

The Hamilton Rubber Manufacturing Co., Trenton, New Jersey, has filed an amended certificate with the Secretary of State increasing its capital stock from \$300,000 to \$1,000,000. The increase was authorized at a meeting of the board of directors of the company held on July 9. George R. Cook is president and A. Boyd Cornell is secretary of the company.

THE REMEDY FOR PRICE-CUTTING.

In renewing its call upon Congress for the prompt passage of the Stephens Standard Price Bill, as amended, the Federal Trade Commission has shown a keen sense of the situation created by the Colgate decision of the Supreme Court.

The Colgate decision can be effective only in controlling retailers who buy directly from manufacturers. If a manufacturer sells to jobbers there is nothing to prevent the price-cutting retailer from securing goods through jobbers and continuing to snap his fingers at the manufacturer's standard price policy. The difficulties of manufacturers dealing exclusively with the jobbing trade are really increased by the decision because of the advantage which it gives to producers selling exclusively through retailers.

In offering to large manufacturers the tempting certainty of stabilizing their market by confining their distribution to retailers, the Colgate decision is a serious menace to every small manufacturer and wholesaler which can be removed only by remedial legislation such as the Stephens Bill which furnishes the machinery by which smaller manufacturers can secure the good will of distributors, wholesale and retail, and assure them a living profit.

FOR THE HEALTH OF THE WORKERS.

The Pennsylvania Rubber Co., Jeannette, Pennsylvania, takes particular interest in the welfare of its employees. Every worker after a year's service receives a \$300 insurance policy, which after two years is advanced to \$500, and automatically increases \$100 a year until a maximum of \$1,000 is reached.

An up-to-date hospital is maintained at the plant where registered nurses and a staff of physicians are subject to call



A UNIT OF THE PENNSYLVANIA RUBBER CO.'S HOSPITAL.

at all hours. There is an operating room, a first-aid room, a sterilizing room, and a ward with three beds. Any injury to a workman, however slight, must be attended to at the hospital, thus minimizing chances of infection or secondary complications.

The drinking water for the workers is filtered, sterilized, and then cooled and piped throughout the factory buildings.

TRADE NOTES.

The Republican Rubber Co., Kansas City, Missouri, a branch of the Republic Rubber Co., Youngstown, Ohio, has leased for ten years the two-story building at the corner of Nineteenth and McGee Streets, Kansas City. It is so constructed that additional stories can be added if necessary. This will be the district headquarters for the states of Nebraska, Kansas, Oklahoma and Western Missouri, including the sub-branch and territory at St. Louis. F. W. Osmun is district manager.

The BeSaw Tire & Rubber Co., Ardmore, Oklahoma, has sold its plant at Hartsville, Ohio, to the Monarch Rubber Co. and will center its operations at Ardmore, where it expects to begin the manufacture of high-grade tires early in the fall. At a special meeting of its stockholders on June 16, 1919, the classification of the company's stock was changed from \$500,000 to \$900,000 common and from \$500,000 to \$100,000 preferred. The newly elected officers and directors are S. A. Apple, president; Charles von Weise, vice-president; Mark Kirkpatrick, secretary-treasurer; Edward Galt and Frank S. Gates, directors.

The Brunswick-Balke-Collender Co., Chicago, Illinois, is building an addition to its tire factory at Muskegon, Michigan, to be devoted exclusively to the manufacture of its "Brunswick" cord tires.

The Fort Wayne Tire & Rubber Manufacturing Co., Fort Wayne, Indiana, has completed its new factory and installed the power plant. It is now installing the necessary machinery and equipment for the manufacture of automobile and truck tires and expects to begin manufacturing early in August. The electrical equipment is being furnished by the General Electric Co., Schenectady, New York, and the tire-building machinery

for both cord and fabric tires, all of which is motor-driven, by the Allen Machine Co., Erie, Pennsylvania, and the Williams Foundry & Machine Co., Akron, Ohio. The company will manufacture its tires under the trade-name "Wayne."

C. A. Braley and Albert Mebus, receivers of the Kansas City Tire & Rubber Corporation, Fourth and Central Streets, Kansas City, Missouri, announce that the company's plant at Chester, West Virginia, has been leased to the Cord Tire Co., which is now operating the same.

The International Toy Co., Eau Claire, Wisconsin, has constructed for the construction of one unit of its factory to be 60 by 200 feet. These units, three in all, will be of concrete substruction brick pilasters, four feet wide, and brick wall, four feet high, to windows, with steel sash for windows. The main building to be erected in front of these units will be crescent-shaped, to form a background for the children's playground which the company will feature as one of the attractions of the Northwest, supplying it with all kinds of amusement devices. The company, in addition to its rubber-tired express wagons for children, will manufacture kindergarten toys, coated with a preparation containing rubber which will injure neither the children nor their clothing.

The Akron, Tire Co., Inc., Long Island City, New York, expects soon to build a larger factory and is constantly improving its machinery. It already has added to its real estate holdings until it now owns an entire block. This company, incorporated under the laws of the state of New York in 1911, for the purpose, among other things, of making rebuilt automobile tires by a special process invented and patented by George E. Batcheller, treasurer of the concern, in 1915 increased its capital from the original \$5,000 to \$300,000. It now employs 100 men. The officers are William H. Batcheller, president; George E. Batcheller, treasurer, and Minnie G. Batcheller, secretary.

The Ray Tire & Rubber Co., 833 Rees Street, Chicago, Illinois, manufacturer of the Ray puncture-proof interliner for tires, is contemplating constructing additional plants at Birmingham, Alabama; one in Los Angeles or San Francisco; and one in the East, to take care of increased business.

The Perfection Tire & Rubber Co., Fort Madison, Iowa, is building a three-story addition to its plant, 100 by 200 feet, to cost approximately \$120,000. It is expected that it will be finished early in August.

The Triple Airless Tire Co., Manerville, Pennsylvania, expects to begin the operation of its new factory about August 1 for the manufacture of its specially designed tires. The officers of the company are A. M. Mateer, president; W. A. Iseman, vice-president, and A. C. Hileman, secretary-treasurer.

The Seamless Rubber Co., Inc., New Haven, Connecticut, is to build a new plant on the waterfront which will comprise a group of buildings covering an area 240 by 300 feet. There will be three five-story buildings, connected by one-story ones, and a large power house. It is expected that the plant will be completed by February, 1920, when the present one will be offered for sale.

The Gillette Rubber Co., Eau Claire, Wisconsin, is building a two-story brick and steel addition to its factory, which is nearly completed. The first floor will be devoted to the tire-building department and the second to repairing, fabric cutting and stock repairing.

The Syracuse Rubber Co., Inc., 301 Herald Building, Syracuse, New York, is building the first unit of its plant on its property on Thompson Road, East Syracuse. It will be of reinforced concrete, faced with brick, three stories high, with inside dimensions 60 by 200 feet. The incorporation of this company was noted in *THE INDIA RUBBER WORLD* June 1, 1919. The officers are E. R. Caldwell, president; Richard Byrne, vice-president; R. L. Caldwell, secretary; G. R. Loggie, treasurer and general manager; F. A. Shane and A. E. Wing, directors.

The Century Rubber Works, Chicago, Illinois, has secured

property in Clearing, Illinois, on which it will build a new plant at an early date. Although the Century company has previously manufactured Ford tires exclusively, it intends to make other sizes in the new plant.

The Quaker City Rubber Co., Philadelphia, Pennsylvania, is building a two-story addition to its factory at Wissinoming, which will add about 41,000 square feet of floor space to its plant. The structure will be fireproof, of brick and concrete, and will be devoted entirely to the manufacture of tires. The cost, including machinery and equipment, will be about \$250,000. In addition, the company intends to build a cord-tire treating structure, the location of which has not yet been decided upon. The new addition now being erected will include modern conveniences and appliances for the health, safety and general welfare of employees.

The Advance Rubber Co., 8th avenue, between 17th and 18th streets, Brooklyn, New York, is having plans approved by the Building Department for the erection of a building 200 by 130 feet, to cost probably in excess of \$50,000. The company will build both cord and fabric tires. This concern was incorporated in 1912 and recently increased its capital from \$150,000 to \$1,000,000.

The business of Meyer & Brown, New York City, crude rubber brokers, has been transferred to Meyer & Brown, Inc., a New York incorporation noted in another column in this issue. The management and control will remain the same.

The Belden Manufacturing Co., 23d street and Western avenue, Chicago, Illinois, manufacturer of "Beldenite" rubber-insulated wires and cables, fiber and bakelite sheets, rods, tubing, etc., is planning to build a four-story brick and concrete building, 90 by 160 feet, on the Van Buren street side of its property in the block bounded by Van Buren, Congress and 47th streets and the Outer Belt Line, on which it intends eventually to consolidate its manufacturing business. It is operating two one-story concrete mill buildings, erected during the last three years. The new structure will be known as No. 8. J. C. Belden is president of the company.

The Arrow Grip Manufacturing Co., Inc., Glens Falls, New York, manufacturer of nonskid chains and lifting jacks, is completing a new factory of the Austin type, to cost approximately \$100,000. It will be equipped with modern machinery. The company recently increased its capital stock from \$100,000 to \$500,000.

The Cutler-Hammer Manufacturing Co., Milwaukee, Wisconsin, manufacturer of electric controlling devices, has opened an office at 905 Kresge Building, Detroit, Michigan, which is practically a branch of its Chicago office. H. S. Kinsley is in charge, assisted by C. W. Greenman and M. Dugliss, all of whom were formerly in the Chicago office. Mr. Kinsley was formerly with the engineering department of the Milwaukee plant.

The Cutler-Hammer Manufacturing Co. has recently built a two-story addition to its factory at 12th street and St. Paul avenue, Milwaukee, Wisconsin, to be used for the manufacture of a new compensator intended to be used for starting squirrel-cage motors, for all commercial voltages.

The Parker Collapsible Rim Corporation has removed its offices to 605 Westminster Building, Chicago, Illinois. At the recent annual meeting the concern reorganized and elected a new board of directors. J. W. Hunt is president and W. H. Sicking, general manager.

At a meeting of the directors of the Motor and Accessory Manufacturers' Association it was decided to postpone the usual midsummer convention until autumn, the date to be announced later.

E. O. Floyd has been appointed general sales manager of the Rossendale-Reddaway Belting & Hose Co., Newark, New Jersey, to take effect August 1, 1919.

Roy S. Hardy, crude rubber broker, 82 Beaver street, New York City, announces that he has formed with William Mac-

Arthur, formerly vice-president of J. T. Johnstone & Co., Inc., the partnership of Hardy & MacArthur, to deal in crude rubber and kindred products, and will open an Akron office at Central Savings & Trust building, Akron, Ohio.

The Keystone Tire & Rubber Co., Inc., New York City, now control 134 stores and expect to have 250 branches in operation by the first of the year. The cooperative store system originated with the Keystone company that operates a chain of stores extending from Maine to California and from Washington to Panama.

Smith-Serrell Co., Inc., maker of flexible and rigid shaft couplings, has changed its name to Smith and Serrell.

A DIRECTOR OF THE UNITED STATES RUBBER CO.

BY THE ELECTION OF Frank A. Vanderlip to that body, the United States Rubber Co. has materially strengthened its already efficient board of directors. Mr. Vanderlip is too well known in financial and commercial circles to need any introduction, yet his entrance into the rubber industry makes it appropriate to record some facts regarding his wonderful career, rising from a country machine shop to become one of the highest financial authorities of the day.



FRANK A. VANDERLIP.

He was born in Aurora, Illinois, November 17, 1864, and after a commercial education, found work in a machine shop, meanwhile spending his evenings in mastering stenography. He then took a year's course at the University of Illinois, at Champaign, that state, specializing on finance and political economy. He joined the staff of the "Chicago Tribune," reporting financial affairs, supplementing his education by attending lectures at the University of Chicago. Later he was made financial editor of the "Tribune." He bought an interest in "The Economist," in 1894, serving as associate editor until 1897.

In that year Lyman J. Gage was appointed Secretary of the Treasury of the United States of America, and he took Mr. Vanderlip to Washington as his private secretary. Three months later the latter was appointed Assistant Secretary, in which position he showed his rare qualifications by organizing the Treasury forces for work on the loan needed by the Government to build up our Army and Navy for the Spanish war.

After four years in the United States Treasury, he resigned to become vice-president of the National City Bank of New York City, the largest institution of its kind in America. He was a delegate to the International Conference of Commerce and Industry at Ostend, Belgium, in 1902, and made an extended tour of Europe, studying financial and commercial conditions of Great Britain and the continental nations. In 1909 he succeeded to the presidency of the National City Bank, a position he resigned last June.

During the period when this country was at war Mr. Vanderlip devoted his entire energies to assist Secretary McAdoo in the Liberty Loan campaigns of that period. After the armistice he made another trip of observation to Europe. He is prominent in many financial and philanthropic organizations, has written many important articles and several books on financial subjects, and has delivered addresses before many prominent commercial associations. His home is at Scarborough-on-the-Hudson, New York.

A TEXAS TIRE MAN.

BORN IN SOUTHERN ILLINOIS IN 1887, Cassell De Hibbs was reared on a farm until he was 17 years of age. His constant tinkering with the farming implements convinced his parents that he would make a better mechanic than farmer, and he was apprenticed to a carriage builder, who put him through a rigid course of training in forging, body making, top making, painting and upholstering, and he became an expert carriage maker.

About the time his apprenticeship was finished he decided to seek his fortune in Texas, and in 1907 he found employment in a carriage shop in Dublin of that state. Here he saw for the first time a motorcycle, and his inventive ingenuity being aroused, he secured a bicycle, and in a short time was touring the roads on his own motorcycle, his supply of gasoline in varnish cans strapped to the machine.

Forecasting the substitution of motor-propelled for horse-driven vehicles, he decided to interest himself with the coming important industry, and after about a year in Dublin, he proceeded to Fort Worth, Texas, and began to study rubber with the same thoroughness he had previously given to the carriage business.

His first experiments were repairing tires, and while so doing he invented, patented and manufactured various section molds, tube-repairing machines, and repairmen's tools that are in wide use to-day. He then turned his attention to devising a way to manufacture automobile tires, using tires to work from that had been damaged beyond repair. He invented a machine to strip tires layer by layer, another machine to rebuild them, adjustable molds, and a process of curing that turns out a finished tire.

Mr. Hibbs' latest venture is the creation of an up-to-date plant for the manufacture of new tires, in which he will utilize several of his inventions.

PERSONAL MENTION.

At a meeting of the Board of Directors of the United States Rubber Co., New York City, held July 2, 1919, Frank A. Vanderlip, until recently president of the National City Bank, New York City, was elected a director of the rubber company in place of William S. Kies, resigned. Mr. Kies is vice-president of the American International Corporation and will devote his entire attention to its business in South America, from which he has just returned after five months' absence in that territory.

Paul Elbogen, formerly in charge of the Akron (Ohio) office of Fred Stern & Co., New York City, crude rubber importers, has been transferred to the New York office as manager.

J. C. Witwer, until recently assistant superintendent in charge of production of the International India Rubber Corporation, South Bend, Indiana, has been promoted to the position of factory manager.

Bartlett J. Smith has been appointed Eastern district manager for the International India Rubber Corporation, South Bend, Indiana, with headquarters in New York City.

R. B. Parker has been promoted from the position of assistant manager to that of branch manager of the Philadelphia (Penn-

sylvania) office of the Braender Rubber & Tire Co., Rutherford, New Jersey. He succeeds E. J. Smullen, who resigned to go into the automobile agency business in Chester, Pennsylvania.

F. I. Reynolds, formerly sales manager of pneumatic tires for the United States Tire Co., has joined the Keystone Tire & Rubber Co., Inc., New York City, as sales manager. Mr. Reynolds had been sales manager of the Diamond Rubber Co. previous to its absorption by the B. F. Goodrich Co. and was at one time connected with the Dupont Powder Co., Wilmington, Delaware.

NEW INCORPORATIONS.

Add-A-Tire & Supply Corp., July 12 (New York), \$100,000. S. J. Clac-tuch, C. Johnson, W. Miskowiak—all of Buffalo, New York. Principal office, Buffalo, New York. To manufacture auto tires and other accessories.

Ames Hidden Tire Co., Ltd., May 29 (Canada), \$100,000. T. H. Rieder, president; Hugo Wellen, treasurer. S. L. Harty, secretary. Principal office, 1221 Mount Royal avenue, East, Montreal, Canada. To manufacture automobile tires.

Arnold Rubber Co., The, June 4 (Ohio), \$100,000. G. Hopkinson, president; H. W. Arnold, vice-president and general manager; C. W. Averett, secretary and treasurer; J. H. Smith, director and chief chemist—all of Akron, Ohio; H. Hopkinson, director and attorney, Boston, Massachusetts. Principal office, Ravenna, Ohio. To manufacture heels, soles, and molded goods.

Avon Tire & Rubber Co., Inc., July 15 (New York), \$5,000. D. D. Deutsch, J. L. Diamond, S. Rabinowitz—all of 1589 Broadway, New York City. To manufacture auto tires, etc.

Ashtland Tires & Rubber Co., May 15 (Ohio), \$100,000. I. Fickel, president; G. C. Wagner, vice-president; A. A. Fickel, secretary and treasurer. Principal office, Union Building, Cleveland, Ohio. To manufacture inner tubes and other rubber products.

Bester Wear Tire Co., June 30 (Delaware), \$100,000. T. L. Croteau, P. B. Drew, H. W. Knox—all of Wilmington, Delaware. Delaware agent, Corporation Trust Co. of America, Du Pont Building, Wilmington, Delaware. To repair and manufacture tires and tubes.

Bolster Tire Sales Corp., June 30 (New York), \$25,000. A. G. Bluter, J. A. Griffin, both of Syracuse; P. C. Wheeler, Cincinnati—both in New York. Principal office, Syracuse, New York. To deal in auto tires, accessories, etc.

Collapsible Rim Corp., June 27 (Delaware), \$150,000. S. W. Hill, P. B. Drew, E. E. Knox—all of Wilmington, Delaware. Delaware agent, Corporation Trust Co. of America, Du Pont Building, Wilmington, Delaware. To manufacture and deal in collapsible automobile wheel rims and all accessories.

Cooperative Vulcanizing Co., Inc., The, May 2 (Ohio), \$5,000. C. C. Clem, president and manager; V. B. DuVall, vice-president; E. W. Mink, secretary and treasurer; W. W. New and J. H. Sam, directors—all of Dayton, Ohio. Principal office, 1221 Western street, Dayton, Ohio. To buy and sell automobile tires and accessories.

Deltac Manufacturing Co., Inc., July 12 (Delaware), \$100,000. T. L. Croteau, H. E. Knox, S. E. Hill—all of Wilmington, Delaware. Delaware agent, Corporation Trust Co. of America, Du Pont Building, Wilmington, Delaware. To deal in manufactured products made from gums, rubber, etc.

Dreyfus Tire Works, Inc., June 24 (New York), \$1,000. W. Auerbach, 252 Greene avenue; C. Auerbach, 176 Bushwick avenue, both of Brooklyn; B. Auerbach, 699 Jackson avenue, Bronx, both in New York. Principal office, Brooklyn, New York. To deal in tires and supplies.

Duplex Cushion Tire Co., May 31 (California), \$1,000,000. B. F. and W. A. Coons, F. O. Meyers, G. H. Woodruff, principal office, 620 Merchants National Bank Building, Los Angeles, California. To deal in automobile supplies and rubber goods.

Essenkey Co. of Detroit, Inc., May 12 (Michigan), \$10,000. J. C. Reeves, president; 50 Watson street; W. B. Townsend, vice-president, 271 Merrick avenue; N. C. Reeves, secretary and treasurer, 50 Watson street—all of Detroit, Michigan. Principal office, 872 Woodward avenue, Detroit, Michigan. To promote sale of "Essenkey" tire.

Faber, Inc., A. W. July 5 (New Jersey), \$150,000. A. Macmillan, 411 Passaic avenue; S. Kaufman, 334 Belmont avenue; J. T. Elliot, 801 Mount Prospect avenue—all of Newark, New Jersey. Principal office, 41 Dickerson street, Newark, New Jersey. Agents in charge, R. J. Metzler. To buy, produce, sell and deal in all kinds of rubber.

Galties Tire Co., Inc., July 23 (New York), \$5,000. S. Rabinowitz, J. Jacobs, S. Bernheim—all of 1765 Broadway, New York City. To manufacture auto tires.

Gold Metal Tire and Rubber Co., April 23 (Oklahoma), \$10,000. A. B. and M. Unger and M. R. Cohen—all of Muskogee, Oklahoma. Principal office, Muskogee, Oklahoma. To manufacture, buy, and sell tires for automobiles, etc.

Heilman Co., Frederick, March 25 (Delaware), \$100,000. L. E. O'Brien, Crystal Annex; H. G. O'Hara, 29 Sell street; L. O. Shipp, Main street—all of Johnstown, Pennsylvania. Principal office, Johnstown, Pennsylvania. To manufacture and sell "Man-Hell" automatic innipers.

Heisey Tire and Rubber Co., The, April 15 (Ohio), \$50,000. C. F. Ilake, Jr., president; W. J. Howard, vice-president; H. C. Heisey, secretary and general manager; H. A. Jackson, treasurer; L. A. Keiser, director—all of Cincinnati, Ohio. Principal office, Eighth avenue and Broadway, Cincinnati, Ohio. To buy, sell, and deal in rubber tires and tubes.

Hill Bros. Co., June 12 (Massachusetts), \$80,000. L. T. Hill, president; Hudson Co., N. Y., vice-president, 1301 Centre street; J. A. Keiser, director; C. B. Hill, secretary and treasurer, Hudson—both in Massachusetts. Principal office, 120 Central street, Hudson, Massachusetts. To manufacture mass-produced rubber goods.

Illinois Savold Tire Co., July 9 (Delaware), \$2,000,000. T. L. Croteau, P. B. Drew, H. E. Knox—all of Wilmington, Delaware. Delaware agent, Corporation Trust Co. of America, Du Pont Building, Wilmington, Delaware. To manufacture and deal in all kinds of auto tires.

Jacobs Tire & Rubber Corp., June 25 (Delaware), \$1,000,000. P. B. Drew, H. F. Knox, S. E. Hill—all of Wilmington, Delaware. Delaware

agent, Corporation Trust Co. of America, Du Pont Building, Wilmington, Delaware. To manufacture, buy, sell and deal in rubber tires.

Jones Nevers Loosen Rubber Heel Corp., July 3 (Delaware), \$200,000. J. J. Jones, 368 West 29th street; I. R. Walker, C. T. Hesser, both of 116 West 39th street—all of New York City. Delaware agent, United States Corporation Co., Dover, Delaware. To manufacture, sell, and deal in rubber heels, etc.

Logan Tire Co. of America, Inc., July 8 (Delaware), \$500,000. F. R. Hansell, Philadelphia, Pennsylvania; J. M. MacFarland, J. V. Pimm, both of Camden, New Jersey. Delaware agent, Corporation Guarantee & Trust Co., 927 Land Title Building, Philadelphia, Pennsylvania. To manufacture, buy, and deal in rubber tires and rubber goods.

MacMichael Tire Co., Inc., The L. P., July 26 (New York), \$60,000. L. P. MacMichael, 225 West 86th street, L. G. Haas, W. P. Muller, both of 2 Rector street—all of New York City. To manufacture rubber products.

Mercer Tire Corp., July 14 (New York), \$10,000. T. H. Montgomery, principal, I. C. Jacobs, 191 Broadway, New York City. To manufacture tires.

Meyer & Brown, Inc., July 1 (New York), \$1,500,000. O. Meyer, Harrisburg, Pa.; H. Brown, New Rochelle, N. Y. Street 19 West 72nd street, New York City—all in New York. To manufacture rubber products.

Michigan Savold Tire Co., June 24 (Delaware), \$2,000,000. S. E. Dill, P. B. Drew, H. E. Knox—all of Wilmington, Delaware. Delaware agent, Corporation Trust Co. of America, Du Pont Building, Wilmington, Delaware. To rebuild, manufacture, and deal in tires of all kinds.

Missouri Savold Tire Co., June 24 (Delaware), \$2,000,000. S. E. Dill, P. B. Drew, H. E. Knox—all of Wilmington, Delaware. Delaware agent, Corporation Trust Co. of America, Du Pont Building, Wilmington, Delaware. To manufacture and deal in tires of all kinds.

Mount Royal Rubber Co., Ltd., May 23 (Canada), \$500,000. T. H. Rieder, D. L. McGibbon, S. J. Lefebvre, C. H. Ancrum, W. E. Conghy—all at Montreal, Canada. Principal office, Montreal, Canada. To manufacture and deal in rubber goods.

Nocem Rubber Corp., July 7 (New York), \$125,000. S. M. Lazarus, 106 Haven avenue; A. L. Meim, 3 West 103rd street, both of New York City; A. M. Burman, 990 Bushwick avenue, Brooklyn, New York. To manufacture rubber.

North Western Tire Corp., July 15 (New York), \$25,000. J. Jacobs, S. Bernheim, 719 Loewenthal—all of 1877 Broadway, New York City. To manufacture tires.

Northern Rubber Co., Ltd., The, January 14 (Canada), \$500,000. F. E. Farnidge, president, A. F. Dwyer, secretary. Principal office, corner of Alice and Metcalf streets, Guelph, Ontario, Canada. To manufacture rubber footwear.

Oklahoma Tire & Rubber Manufacturing Co., June 3 (Oklahoma), \$1,000,000. E. L. Jones, R. Rogers, E. J. Baxter, all of Tulsa, Oklahoma. Principal office, Tulsa, Oklahoma. To deal in rubber, etc.

Penn-Olio Tire Distributor Co., The, May 20 (Ohio), \$10,000. A. F. Butterfield, president; H. F. Toedtman and C. S. Goby, vice-presidents; R. C. Hearty, secretary; A. W. Gillespie, treasurer; C. S. Goby, director—all of Cleveland, Ohio. Principal office, 6523 Euclid avenue, Cleveland, Ohio. To distribute Braender tires.

Peifect Rubber Co., The, June 19 (Ohio), \$100,000. C. H. Vogle, president; E. O. Townsend, vice-president; J. M. Hittney, secretary and general manager; M. Brennan, J. M. Hittney, both of Cincinnati, Ohio; L. C. Chase and A. C. Moore, directors. Principal office, Mansfield, Ohio. To manufacture rubber tires, hot-water bags, etc.

Peterson Tire & Supply Co., Inc., July 1 (Illinois), \$10,000. C. E. Peterson, president; R. E. Anderson, vice-president; L. V. Anderson, secretary and treasurer; E. L. Pettit, sales manager. Principal office, 1309 Fifth avenue, Moline, Illinois. To deal in tires, tubes and auto supplies.

Provo Tire Co., Inc., July 7 (New York), \$4,000. R. J. and N. Provo—all of Syracuse, New York. Principal office, Syracuse, New York. To manufacture tires.

Queensboro Tire Co., Inc., July 9 (New York), \$50,000. C. G. Stone, 447 Second avenue, Mount Vernon; J. I. Poria, 1002 Grand avenue, New York City; J. J. Tanzola, 162 Eighth street, Brooklyn—all in New York. To deal in tires.

Rambler Rubber Co., Inc., July 17 (New York), \$500. E. R. Dodge, D. Nicholson, H. Spingarn—all of 61 Broadway, New York City. To manufacture tires.

Royal Webbing Co., Inc., July 7 (New York), \$15,000. H. Kropf, 1428 Park avenue, M. Kropf, 844 Whitlock avenue, both of New York City; A. R. Karger, 60 South 51st street, Corona, Long Island—both in New York. To manufacture elastic goods, etc.

Rubber Limb Co. of New York, Inc., The, July 17 (New York), \$5,000. I. H. and J. Rosenberg, both of 42 West 72nd street; J. J. Frey, 125 West 93rd street—all of New York City. To manufacture rubber limbs.

Rubber Products & Machinery Co., March 6 (California), \$75,000. J. C. Stodwell, president; A. T. Sackett, vice-president; C. G. Sackett, secretary. Principal office, 225 East Ninth street, Los Angeles, California. To manufacture tire repair materials, machinery, tools, equipment, etc.

Rubber Products Corp., June 12 (Delaware), \$500,000. G. H. Dowsey, president, 60 Wall street; E. Parson, vice-president, 66 Broadway; L. E. Weiss, 60 Wall street—all of New York City. Principal office, 60 Wall street, New York City. To manufacture inner tubes and mechanical rubber goods.

Security Signal Sales Corp., July 7 (Delaware), \$100,000. E. F. Edelbrock, J. F. Malloy, M. M. Lucy—all of Wilmington, Delaware. Delaware agent, J. F. Malloy, 927 Market street, Wilmington, Delaware. To purchase, sell, and dispose of automobile articles and accessories.

Snap-On Tread & Tire Co., Inc., July 3 (Delaware), \$1,000,000. C. A. Cole, 260 Kensington, R. A. Van Voorhis, 265 Union street, Jersey City; A. R. Oakley, 400 River—all in New Jersey. Delaware agent, Registrar & Transfer Co., 900 Market street, Wilmington, Delaware. To manufacture, buy, sell and deal in tires.

Standard Rubber Co., Inc., July 30 (New York), \$125,000. F. A. and B. Elshoff, 68 Gates avenue, Montclair; C. H. Morrell, 978 Broad street, Newark—both in New Jersey. Principal office, 400 Billorell avenue, New York City. Agents, J. A. Hines. To buy, manufacture, sell and deal in all kinds of rubber.

Steinbit Tire Co., Inc., July 11 (New York), \$15,000. E. and N. Stein, both of 10 Mulcaster street; M. G. Ellenbogen, 19 Berkshire street—all of

Rochester, New York. Principal office, Rochester, New York. To manufacture tires.

Tinsley's Economy Tire Co., Inc., June 26 (New York), \$10,000. J. Jacobs, S. Bernheim, W. Loewenthal—all of 1877 Broadway, New York City. To manufacture tires.

Tire Life Co., Inc., July 7 (New York), \$100,000. A. H. Higgins, 61 Broadway, New York City; R. H. Martin and F. Roffe, both of Kelly Building, Long Island City, New York. To manufacture tires, etc.

Tire Sales Co., July 8 (Delaware), \$100,000. F. R. Hansell, Philadelphia, Pennsylvania; E. M. MacFarland, J. V. Pimm, both of Camden, New Jersey. Delaware agent, Corporation Guarantee & Trust Co., 927 Land Title Building, Philadelphia, Pennsylvania. To manufacture, buy, sell, and deal in rubber tires and rubber goods.

Triplex Tire Corp., July 10 (New York), \$250,000. J. and G. Martin, both of 105 West 52nd street; J. E. Ankus, 299 Broadway—all of New York City. To manufacture tires.

United States Rubber & Land Co., Inc., June 27 (Delaware), \$1,000,000. M. L. Rogers, L. A. Irwin, W. G. Singer—all of Wilmington, Delaware. Delaware agent, Delaware Registration Trust Co., 900 Market street, Wilmington, Delaware. To plant, cultivate, and grow rubber trees, and to manufacture and deal in rubber and the by-products thereof.

Zenith Tire & Rubber Co., July 7 (Delaware), \$100,000. E. E. McClopd, 722 Citizens Building; M. R. Jordan, Society for Savings Building; J. L. Francis, 719 Citizens Building—all of Cleveland, Ohio. Delaware agent, Colonial Charter Co., 927 Market street, Wilmington, Delaware. To manufacture and deal in tires of all kinds.

INCORPORATION NOTES.

The Kelley Tire & Rubber Co., 962 Chapel street, Connecticut, which was incorporated under the laws of Delaware on February 7, 1919, is capitalized at \$1,000,000, to market pneumatic tires and inner tubes. The officers are Edward J. Kelley, president; Charles H. Bortell, Jr., vice-president and treasurer, and Harry F. Gilg, director.

The Simplicity Wheel Co., Grand Rapids, Michigan, was incorporated under the laws of Michigan in February, 1917, to sell "Simplicity" demountable wheel attachments. The incorporators and officers are F. B. Raymond, president; F. W. French, vice-president; George Clapperton, secretary and treasurer; Elmer H. Grey and Dr. Louis Barth.

The Armstrong Tire & Vulcanizing Co., 1336 Michigan avenue, Chicago, Illinois, was incorporated by M. Klienmann and others at \$20,000, on December 28, 1918, to manufacture, buy, sell, build and repair automobile tires, tubes, etc., and acquire patents, etc.

The Independent Airless Tire Co., Independence, Missouri, was incorporated at \$75,000 on October 2, 1918, to manufacture automobile tires. It has built a stone structure 75 by 100 feet, with full basement, on the Missouri Pacific Railroad, with switch-spur, and is completing the installation of machinery. It expects to start manufacturing as soon as this is finished. The officers are J. E. Bridges, president; Eben Miller, vice-president; E. C. Harrington, secretary, and W. C. Bridges, treasurer.

MICHELIN EMPLOYEES INSURED IN CELEBRATION OF PEACE.

In recognition of their loyalty, and in celebration of the signing of peace, the employees of the Michelin Tire Co., Milltown, New Jersey, have each received, without cost or physical examination, a paid-up insurance policy covering their lives for varying sums, depending on their years of service with the company. Hereafter every new employee will be insured upon the completion of his first six months of continuous service. The amounts range from \$200 for six months' employment to \$1,200 for ten years and over.

In announcing this liberal policy, J. Hauvette-Michelin, vice-president of the company, mentions with pride the faithful work of Michelin operatives on war orders for tires and gas-masks, and of their patriotic support in the various Liberty Loan, Red Cross and other war drives.

The world-wide Michelin organization of which the American company is a part, also has reason to be proud of its contribution to the Allied armies in the great war. Collectively the various Michelin companies gave 3,333 men, 511 of whom lost their lives. No less than 690 Michelin employees received decorations during the war, twelve officers out of this number having been made "Chevaliers de la Legion d'Honneur," while twenty-nine received the military medal.

CANADIAN NOTES.

THE AMES HOLDEN TIRE CO., LIMITED, 1221 Mount Royal Avenue East, Montreal, Quebec, has been incorporated by letters patent of the Dominion of Canada to manufacture automobile tires. The authorized capital is \$3,000,000, of which \$2,000,000 has been issued and fully paid up. The company will build its plant at Kitchener, Ontario. The officers are Talmon H. Rieder, president; Hugo Wellein, treasurer, and S. J. LeHuray, secretary. The directors include the above and D. Lorne McGibbon, Sir Herbert Ames, Major L. L. Anthes, Walter T. Barrie, J. C. Breithaupt, Hon. Nathaniel Curry, Hon. C. P. Beaubien, K. C.; William Mulock, Jr., Hon. Wallace Nesbitt, K. C., and Thomas H. Lane.

The Goodyear Tire & Rubber Co. of Canada, Limited, Toronto, Ontario, has under construction two additions to its pneumatic tire plant, one 100 by 100 feet and the other 60 by 120 feet, both four stories and basement. In addition, a large warehouse is being built in Regina, Saskatchewan, on which work has just been begun. It is expected that all these buildings will be completed before the first of the year.

The K. & S. Canadian Tire & Rubber Co., Limited, Toronto, Ontario, manufacturer of molded rubber sundries, intends to double the capacity of its plant and add dipped goods to the lines now being manufactured. A new building will be put up for the purpose. In addition, the company will erect a tire plant, 80 by 185 feet, three stories high, of fireproof construction. Both buildings will be on the company's property at Weston, Ontario, and machinery for equipping them will be purchased later. The tire plant is planned for a capacity of 1,000 tires and 2,000 tubes daily.

OAK TIRE & RUBBER CO. ENLARGEMENT.

The Oak Tire & Rubber Co., Toronto, Ontario, will considerably increase its output by the addition of new machinery. In the spring it was turning out 1,200 inner tubes and 150 casings daily, but by this addition will have a capacity of 250 casings. The success of the enterprise, now only about 20 months old, is due chiefly to the energy of Frank D. Law, the managing director, who in nine months organized the company, secured the capital (in war times, be it observed) of \$400,000, purchased and installed the machinery and started production, closing the first year with a net profit of over \$32,000.



FRANK D. LAW

The factory is under the supervision of Walter Smith, formerly of Gutta Percha & Rubber, Ltd., Toronto, Canada. Walter Seaward, of the Dreadnaught Tire & Rubber Co., Baltimore, Maryland, is a director and as consulting superintendent visits the factory at Oakville each month.

A CANADIAN INDUSTRIAL MUSEUM.

Connected with Laval University, Montreal, Canada, is a Faculty of Commerce, and as an annex to this is the Commercial and Industrial Museum of Montreal which has for its object imparting to Canadian merchants and manufacturers information for the advancement of their business. The museum is housed in an imposing building in which samples will be displayed of all the natural and manufactured products of the world, and as far as possible, exhibits showing the different stages of manufacture, modes of packing, etc., with labels giving explanatory information.

Commercial information concerning Canadian and foreign markets is afforded exhibitors who will also have access to the

commercial library. Exhibits are solicited from rubber manufacturers, both Canadian and foreign, for this permanent industrial exposition, which is open to all visitors free of charge.

RUBBER GROWING TO BE SHOWN IN MOTION PICTURES.

A motion picture chronicle embracing all the details of the growing and harvesting of rubber in Sumatra will be the object of an expedition to be started soon by Harry Levey, manager of the Industrial Department of the Universal Film Manufacturing Co., New York City, under the auspices of one of the largest manufacturers of rubber products in the world.

When completed this series of pictures will stand as the first and only visualized and comprehensive survey of this end of the rubber industry in existence. The film will be given a nation-wide distribution as an educational feature.

THE LESSON OF THE DIRIGIBLE DISASTER.

The terrible accident to the Goodyear dirigible balloon in Chicago, resulting from the fall of the whole blazing machine into a bank building and the explosion of the fuel tank, the whole catastrophe causing 12 deaths, grimly emphasizes as nothing before has done the need of strict government supervision of aircraft and air transportation of all kinds. Complete and unvarying safety has not yet been attained for any kind of travel, but the hazards of aerial travel are the greatest known and all reasonable means should be taken to minimize them, and especially to safeguard the public on the ground below. Nothing should ever be done to hamper or discourage the fullest development of the science of aerial navigation, for its value in many directions has been fully demonstrated, but the right kind of regulations need not do that.

Already air pilots of every sort must be licensed, and thinking persons agree that comprehensive Federal laws governing flying of all kinds are essential to the common good. Reasonable laws would provide for intelligent supervision of both the persons and vehicles engaged in aerial navigation; would prohibit flights over cities and prescribe flight altitudes over less populous districts; would provide landing places for both airplanes and dirigibles on the outskirts of large cities; and would prohibit the use of aircraft for circus purposes to give thrills to the public.

There is also another point worthy of consideration. Strict navigation laws prevent anarchy on the seas, and the time is coming when similar laws will be needed to prevent it in the air.

NEW JERSEY SAVOLD TIRE CO.

The New Jersey Savold Tire Co. has been formed to operate in New Jersey under the Savold process for rebuilding used automobile tires. L. R. Pest is president; A. J. Davis, vice-president, and R. K. Underhill, secretary and treasurer. The New Jersey plant is located at 235-249 Elizabeth street, Newark, and has a daily capacity of 400 tires. The company is capitalized at \$2,000,000, par value \$20 per share, under New Jersey laws. Other Savold stations will be established in Atlantic City, Trenton, Camden, Jersey City and other cities and the company will eventually have a daily capacity of 1,000 tires.

OLD DENTAL RUBBER FOR IMITATION CORAL.

New methods of salvaging and utilizing rubber scrap of every kind are frequently coming to light, some on a large scale, others of more interest than moment. As an instance of the latter sort, a young man is working his way across the country and making a neat living besides by buying discarded false teeth from house to house. This itinerant buyer sorts out the platinum pins—the chief prize—to be resold for platinum. Any gold or silver is next broken off, the false teeth being shattered to release it. The plate itself, or dental gum, which remains is sold as quantity warrants to the makers of imitation coral.

THE RUBBER TRADE IN OHIO.

By Our Regular Correspondent.

AKRON NOTES.

IN THE COURSE OF THE RECENT PROCEEDINGS BEFORE THE INTERSTATE Commerce Commission relative to revision of the crude rubber freight classification ratings, it was asserted that 30,000 different articles made of rubber are now produced in the city of Akron, representing in value more than 40 per cent of the annual production of rubber articles in this country and requiring in their manufacture one-fourth of the world's supply of crude rubber and one-half of the amount imported by the United States. In that city alone nearly 70 per cent of the automobile tires made in the United States are produced. Over 60,000 persons are employed in the rubber factories of northeastern Ohio, and because of their rapid expansion the population of Akron, for example, has increased from 70,000 in 1910, to 158,000; Canton from 50,000 to 75,000; and Youngstown from 80,000 to 120,000.

C. E. Cook, for many years a member of The B. F. Goodrich Rubber Co. organization, first at Akron, Ohio, with the mechanical goods department, and later as Pacific Coast manager, with headquarters at San Francisco, and for the last two years located at Akron, Ohio, in connection with branch operating work, has been made sales manager of mechanical goods, for that company.



C. E. Cook.

His long and varied experience with the Goodrich organization fits him for the larger responsibilities his new position entails, and he is receiving the congratulations of his friends in the trade.

The employees of The B. F. Goodrich Co. are to have an athletic field at Liberty Park. The announcement was made by A. B. Jones, second vice-president and director of plant administration, at the victory dinner in honor of the Goodrich track team, thrice winner of Akron's industrial athletic meet.

What is said to be the largest swimming pool in the world is being built at Summit Beach Park, Akron. It is 80 by 100 feet, and from 30 inches to 11 feet deep, with four diving boards and a 20-foot steel tower. John R. Gammeter, inventor of rubber machinery, is president of the Akron Natatorium Co., owner of the pool.

The Mohawk Rubber Co., Akron, is completing its new factory addition, in the form of a new wing to house portions of the cord-tire building and curing departments. The company has just opened a new branch at Dallas, Texas.

Teams of girls from Goodrich, Firestone, Miller, and Goodyear are planning to organize baseball nines for a fall series, to contest for the city title. Goodrich and Goodyear each have two teams practicing.

The General Tire & Rubber Co., Akron, has added what it claims to be the most effective vulcanizing department in the tire industry. Instead of the usual "pit," with the vulcanizers sunk in the ground, the vulcanizers extend from the first floor to the ceiling—20 feet—and their tops are accessible from the second floor, where the men can work in a temperature no higher than in other parts of the factory. This floor is well ventilated, the story being 24 feet high in the clear. Twenty-one vulcanizers will be installed, having a capacity of 3,000 tires per day. A traveling crane, electrically propelled and operated, will handle all molds and cores.

This company's new three-story plant extension will be used for tube and curing rooms. It is built of concrete and is said to have cost \$150,000.

John B. Tuttle, until recently research chemist for the Firestone Tire & Rubber Co., Akron, has been appointed chief chemist of Plant No. 2. He is succeeded by Norman A. Shepard.

A. Huetter, founder of the Premier Rubber & Insulation Co., Dayton, Ohio, has resigned his position as vice-president and general manager and disposed of his holdings in that concern to accept a position in the industrial engineering department of the Firestone Tire & Rubber Co., Akron.

Boxing and wrestling smokers will start at Firestone after Labor Day, at least three being planned for the season. An athletic carnival for both men and women will also be held during the fall and winter season.

The Phoenix Rubber Co., Akron, at its recent stockholders' annual meeting, elected the same directors and officers, but added to its board of directors Joseph Dangel, superintendent of the American Hard Rubber Co., and Morris E. Mason, secretary of the Mohawk Rubber Co.

The company plans to spend over \$250,000 in new buildings to be built at an early date, for the manufacture of tires and mechanical rubber goods of all kinds. E. C. Deibel is president; Theodore Krumeich, vice-president; E. F. Krumeich, treasurer; S. G. Rigdon, secretary and general manager, and J. G. Bretson, factory superintendent.

H. H. McCloskey has been made second assistant treasurer of The Goodyear Tire & Rubber Co., Akron. He has been with the company since 1902, during which time he has been cashier since 1910.

The Goodyear Tire & Rubber Co., Akron, operates four busses equipped with pneumatic cord tires, between the factory and Goodyear Heights, its employees' community. In one month 125,000 passengers were carried. The fare is 3½ cents. Two additional busses are to be put on the route.

The Goodyear Tire & Rubber Co., Akron, has met the problem of instructing salesmen on the road by sending to them week-end traveling sales schools. Class-room work covers policy, product and salesmanship, with reference to tires, accessories and mechanical goods. The company publishes, among other house-organs, "The Triangle," intended for the salesmen only and held confidential by them.

CLEVELAND NOTES.

The district sales managers of The McGraw Tire & Rubber Co., Cleveland, Ohio, held an important meeting at the home office in that city June 20 to 23, at which plans were formulated covering the immediate broadening of the field of distribution of this company's products. The McGraw company recently increased its guarantee on fabric tires from 5,000 to 6,000 miles and also established an 8,000-mile guarantee on cord tires and 10,000 miles on their "Standard Profile" and "HiTread" truck tires, and much new business is anticipated.

The Ideal Tire & Rubber Co., Cleveland, is having plans drawn for the first additions to its factory, to take care of increased business.

The D. & M. Cord Tire Co., Cleveland, will build a three-story factory unit of the E-shaped type, 80 by 225 feet, of reinforced concrete and brick, on the property which it secured from the Board of Trade of Warren, Ohio. It is expected that construction will begin late in August and that the factory will be ready for operation in December. Walter E. Myers is president and Walter R. Denman, secretary and general manager.

Kent E. Lyman has sold The Aetna Rubber Co., Cleveland, to a syndicate, which has increased the capital stock to \$150,000 and will continue the business under the same name. In addition to electricians' and acid gloves, a line of hard and soft molded rubber goods will be added.

The McElrath Tire & Rubber Co., Cleveland, formerly the McElrath Truck Tire Co., has increased its capital from \$15,000 to \$515,000 and will build and equip a factory near Cleveland for the manufacture of cord and solid tires, specializing in truck and Ford sizes. R. P. McElrath is president of the company and the headquarters are in Cleveland.

The A. G. Watt Co., Park Building, Cleveland, has been appointed mid-western representatives and sales agents for Hummel & Robinson, New York City, manufacturers and importers of chemicals and dry colors for the paint, varnish and rubber trades. Mr. Watt was formerly connected with E. M. & F. Waldo, New York City.

The A. G. Watt Co. has also been appointed sole selling agents for Cleveland, Detroit and vicinity for the products of J. S. & W. R. Eakins, color manufacturers, Brooklyn, New York.

MISCELLANEOUS OHIO NOTES.

The Mason Tire & Rubber Co., Kent, Ohio, in competition with other rubber companies, has been awarded the contract for the supply of all kinds of tires for government mail-trucks, etc., from July 1 to December 31, 1919.

Work will begin August 1, 1919, on the factory additions of the Mason Tire & Rubber Co., which are to be devoted to solid-tire construction.

F. E. Schmeidel, paymaster of The Mason Tire & Rubber Co., Kent, Ohio, is candidate for Mayor of that city, heading the ticket of the Republican Club, of which he is president.

The Mason band made its first public appearance July 4, 1919, when it furnished the music for the celebration at Uniontown, Ohio.

The McNaull Tire Co., Toledo, Ohio, has removed its sales and executive offices from the Ohio Building to 1023 Nicholas Building.

The McLean Tire & Rubber Co., East Liverpool, Ohio, has completed a one-story warehouse, 40 by 100 feet, which will enable it to increase its production considerably.

The Faultless Rubber Co., Ashland, Ohio, has awarded the contract for another extension to its plant, to be used in the manufacture of hard rubber, sponges and balls.

The Ashland Tire Co. has been organized at Ashland, Ohio, by Jacob Fickel, president; J. C. Weyher, secretary, and A. A. Fickel, Cleveland, treasurer. A plant will be constructed within a few months on a tract of land of considerable size, and plans are already being drawn.

J. C. Heifner, Ashland, Ohio, has opened a factory for the manufacture of storage and galvanized dipping tanks, cooling tanks, cement cans, etc., for the rubber trade. The building is 50 by 80 feet, three stories high and is being equipped with modern machinery, which will permit the making of equipment to specifications.

The Erie Tire & Rubber Co., Sandusky, Ohio, has awarded a contract for a heater-room building, and will build further additions at an early date.

The Arnold Rubber Co., Ravenna, Ohio, recently incorporated for the manufacture of heels, soles and molded goods, has elected

the following officers: George Hopkinson, president; C. W. Arnold, secretary and treasurer; H. W. Arnold, vice-president and managing director. J. H. Smith is a director and chief chemist. All are Akron men.

The Heisey Tire and Rubber Co., southeast corner of Eighth avenue and Broadway, Cincinnati, Ohio, has taken over the agency for the Oldfield tire in that district and will handle Oldfield products exclusively. Charles F. Hake, Jr., is president. The company is a new incorporation.

The Central Rubber Co., Inc., Defiance, Ohio, is installing additional machinery for the manufacture of reclaimed rubber. It is also equipped to handle all grades of scrap rubber.

The Columbus Climax Rubber Co., 417 Citizens Bank Building, Columbus, Ohio, is operating its factory at Huntington, West Virginia, manufacturing standard inner tubes.

The Perfect Rubber Co. has purchased a site for a rubber factory at Mansfield, Ohio, for the manufacture of rubber toys, hot-water bags and bottles, balls, druggists' sundries, etc. The company was incorporated June 19, 1919, for \$100,000 fully paid up. The officers are: C. H. Voegelé, president; E. O. Townsend, vice-president; J. M. Pittney, secretary and general manager; F. M. Bushnell, treasurer, and J. S. Heil, general sales manager. The above are also directors, besides L. C. Chase and A. C. Moore. Mr. Pittney was formerly efficiency engineer for the Faultless Rubber Co.

The Hydraulic Press Manufacturing Co., Mount Gilead, Ohio, is constructing an up-to-date foundry building and installing equipment. It also plans to double its office and engineering department space.

The Monarch Rubber Co., Canton, Ohio, has begun work on its new factory, to be built at Hartville, Ohio.

The Rubber Products Co., Barbertown, Ohio, makers of "Stronghold" tires and tubes, have announced a new manufacturing program which will double their output within 30 to 40 days.

THE GOODRICH CHIEF CHEMIST.

GEORGE OENSLAGER began his professional career as chemist of the paper mills of the well-known firm of S. D. Warren & Co., at Westbrook, Maine. After ten years in the paper industry he became chemist of the Diamond Rubber Co. at Akron, Ohio. When the Diamond was taken over by the Goodrich company Mr. Oenslager was appointed chief chemist of The B. F. Goodrich Co., which important position he still fills.

Mr. Oenslager is a native of Harrisburg, Pennsylvania, and was born September 25, 1873, graduating at Harvard University in 1894.

In addition to being director of chemical laboratories of The B. F. Goodrich Co., Mr. Oenslager is a member of the Operating Committee of the plant. He is also an active member of the American Chemical Society and the American Institute of Chemical Engineers.



GEORGE OENSLAGER.

THE RUBBER TRADE IN MASSACHUSETTS.

By Our Regular Correspondent.

THE BOSTON SHOE STYLE SHOW, held in this city four days in the middle of July, was in every way superior to its predecessors. It occurred in Symphony Hall, which was arranged for the occasion by the erection of booths for the various exhibits, a silver screen for motion pictures, and a runway down the middle of the hall, along which promenade the thirty or more young ladies of more than ordinary pulchritude, who wore stunning, up-to-date costumes, with appropriate footwear. At the end of the runway was a revolving pedestal, on which each model, in graceful pose, was exhibited, thus giving ample opportunity for observation of the costumes and footwear.

The only rubber exhibits were those of the Foster Rubber Co., Boston, maker of the Cat's Paw rubber heels and soles, and the Cambridge Rubber Co., which has recently added to its products a line of rubber-soled footwear.

Orchestral music and organ recitals were given, and motion pictures showed the progress of shoe manufacture from the primitive sandal down to the latest product of the twentieth-century shoe factory. A number of ladies competed for a prize for the most nearly perfect foot, based on the measurements of the foot of the Venus of Milo.

The show was well attended, and at each of its evening sessions some prominent speaker made a short address. Each day it was in charge of a different organization, namely, manufacturers, travelers, merchants and tanners. Shoe buyers were present from every part of the United States.

* * *

Mention was made last month of the acquisition of a new general manager and a new secretary by the Mayflower Rubber Works Co., South Braintree, Massachusetts. George E. Jean-deur, the general manager, was for 21 years with the New Jersey Car Spring & Rubber Co., Jersey City, New Jersey, where, under the leadership of John J. Fields, the president, he acquired a knowledge and experience of the mechanical rubber business which aptly fits him for his new position. He retired from the secretaryship of the New Jersey company soon after Mr. Fields relinquished his interest in that organization, and now has accepted the above-mentioned position with the Mayflower company. With him he brought Richard K. Fields, son of the former president, who becomes secretary of the Mayflower organization.

Another change is the recent appointment of A. D. Lamont as factory superintendent. He comes from the Davol Rubber Co., where for a number of years he was superintendent.

It is reported that the Mayflower company is planning to enter a new field of manufacturing within a short time, but it is not yet ready to announce its plans in this connection.

* * *

Walter M. Farwell, who has been located on Devonshire street for over 25 years as agent for mechanical rubber goods manufacturers, terminated his connection with the Acme Rubber Manufacturing Co., Trenton, New Jersey, and is now New England agent for the Hamilton Rubber Manufacturing Co., of Trenton, carrying its line of mechanical goods and automobile tubes.

Mr. Farwell's experience in the rubber business is interesting. He started as a boy with the late C. S. Knowles, who represented the Star Rubber Co. Twenty-five years ago Mr. Farwell became agent for the Empire Rubber Manufacturing Co., the successor to the Star Rubber Co. George R. Cook was in control of the Empire company, and nine years later, when Mr. Cook was president of the Acme Rubber Manufacturing Co., Mr. Farwell transferred his fealty to the latter company, which he has represented for 16 years. Mr. Cook is now

president of the Hamilton Rubber Manufacturing Co., of Trenton, New Jersey, and Mr. Farwell now becomes the New England agent for that concern, which manufactures a line of mechanicals suitable to the trade which Mr. Farwell covers.

A two-team baseball league, composed of the women workers of The Fisk Rubber Co., Chicopee Falls, Massachusetts, has been organized. Nine games are to be played, the first being played on July 1. One team is recruited from the office force, the other from the factory. Individual cups will be awarded to all girls who play in at least five games.

Lockers for the girls, where they may keep their uniforms and other equipment, a shower bath and everything to help the girls make their league a really big success have been planned by the Fisk Social and Athletic Association, which is doing so much to promote the welfare of the workers. This association held an industrial track and field meet July 4.

The Needham Tire Co., Charles River, Massachusetts, is building an extensive addition to its plant at Needham, which is expected to be completed and in active operation in a month or six weeks. This enlargement will increase the capacity nearly or quite 300 per cent. The company owns 16 acres of land and water power rights at Charles River Station and manufactures a line of tires which stands high in the market. It also produces a line of fiber soles and rubber heels, which branch of the business is increasing.

* * *

Hill Bros. Co., Hudson, Massachusetts, recently incorporated to make men's welt shoes and deal in leather, rubber, etc., expects to install machinery early in August and shortly afterward begin operations in its new 340-foot one-story factory. Lawson T. Hill, the president, was formerly with Lewis A. Crossett, Inc., and Thos. H. Logan Co. The vice-president, George A. Hill, has been with the W. H. McElwain Co. for the last seven years, three in the factories and four as Pacific Coast representative. Clark B. Hill is secretary.

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The Owen Tire Co., 177 Portland street, Boston, which was incorporated at \$40,000 in 1917, has recently increased its capital to \$250,000. The company operates the Tire Construction Co. and fifteen other retail stores in the New England States, four of them under the name of G. H. McNamara Tire Co., a New Hampshire corporation, and four under the name of Bell Auto Supply Co., a Massachusetts corporation. The officers of the Owen Tire Co. are W. R. D. Owen, president; A. Palder, treasurer, and John E. Crowley, clerk.

The Worcester Tire & Rubber Co., Inc., 14 Harding street, Worcester, Massachusetts, has opened a second store at 681 Main street. Both have the exclusive agency for Worcester County for Keystone, National Speedway and Batavia tires. L. M. Cahn is president of the company.

* * *

Miss K. Brown, shoe manufacturer's agent, London, England, who has been in this country for two or three months, making her headquarters in Boston, sailed for England late last month, after securing the agency for several lines of footwear made in the United States. She will be European agent for the introduction of the footholds manufactured for the Batterman Rubber Co., Boston. She says there is no great demand for rubbers (galoshes) for women in British cities, though the light-weight, foldable footholds are in large demand, and she expects to secure a large trade for these goods, which will come into direct competition with other makes of American-made rubber footwear already introduced.

A corporation has been formed to take over the rubber sole and heel business of the late C. J. Bailey. It is named the Bailey Rubber Heel Co., Inc., with offices at 52 Chauncy street. M. Shuman is president and D. F. Rice, treasurer. This company has purchased the patent rights and trade-marks for the "Monkey Grip Won't Slip" rubber heels and soles, which will be manufactured in black, tan and white rubber. The heels and soles have been described in THE INDIA RUBBER WORLD and are well known in the footwear trade.

* * *

Herbert T. Mason, recently with The Goodyear Tire & Rubber Co., is now treasurer, sales manager and director of the Quabaug Rubber Co., North Brookfield, this state. This company is doing some extensive advertising of its "Armortred" soles and heels.

f- THE RUBBER TRADE IN RHODE ISLAND.

By Our Regular Correspondent.

THE RUBBER MANUFACTURING PLANTS throughout Rhode Island are being operated on a capacity basis, so far as the help situation will permit, although not to the full facilities of the factories. The shorter week—practically all of the concerns being operated on the 48-hours schedule—and the scarcity of desirable help continuing to be serious handicaps to the manufacturers.

With the easement from night and day work resulting from the closing of government contracts the factories for the first time in more than four years are returning to a nearer approach to normal conditions. One evidence of this is to be seen in the general shutdowns announced for the annual overhauling of machinery, alteration, improvement and renovation of plants, inventory of stocks and vacations of the employees.

The Woonsocket Rubber Co. has announced a shut-down of two weeks at the Woonsocket and Millville plants. The last day of work at each mill was on Thursday, July 31, and the first day's work following the vacation will be on Monday, August 18. The two plants employ about 2,500 operatives, 1,700 at the Alice and 800 at the Millville factory. During the vacation period repairs will be made at each plant.

The factory of the National India Rubber Co. at Bristol has closed down its shoe divisions for a summer vacation, the last day for making up shoes being July 31, and operations will be resumed on Monday, August 18. While the mill is closed improvements are being made.

* * *

The annual announcement of the assessments for the year upon the corporate excess of manufacturing, commercial, and miscellaneous corporations in Rhode Island were made about the middle of the month by the State Tax Commissioners. The figures present an interesting study of business conditions and show that the total valuation of corporate excess in the state for the year is \$270,366,059.22. In the list of corporations that have a corporate excess of \$10,000 or more are the following that are connected, directly or indirectly, with the rubber industry: American Multiple Fabric Co., \$128,399; American Wringer Co., \$1,061,936; Anchor Webbing Co., \$175,289; Atlantic Tubing Co., \$199,290; Blackstone Tire & Rubber Co., Inc., \$42,136; Bourn Rubber Co., \$230,335; Broadway Tire Exchange, Inc., \$30,577; Collyer Insulated Wire Co., \$405,056; Davol Rubber Co., \$220,569; Everlastik, Inc. (Boston), \$351,081; The Fisk Rubber Co. of New York (Chicopee Falls, Massachusetts), \$37,600; Glendale Elastic Fabric Co. (Easthampton, Massachusetts), \$18,200; Goody-Rankin Co., \$99,840; The B. F. Goodrich Rubber Co. (Akron, Ohio), \$254,510; Good Tire & Rubber Co. (Boston, Massachusetts), \$204,798; Hamilton Web Co., \$246,291; Hayward Rubber Co., Inc., \$14,716; the Hill & Lacroix Co. (Cranston), \$215,880; Hope Rubber Co., \$56,724; Hope Webbing Co. (Pawtucket), \$1,592,510; Mechanical Fabric Co., \$543,867; Narragansett Rubber Co. (Bristol), \$137,136;

National India Rubber Co. (Bristol), \$1,891,236; O'Bannon Corporation (Boston), \$1,303,762; Phillips Wire Co., \$2,264,042; Revere Rubber Co., \$834,627; Shannock Narrow Fabric Co., \$90,460; Sterling Tire Corporation (Rutherford, New Jersey), \$45,828; Tubular Woven Fabric Co., \$120,307; United States Rubber Co. (New York), \$2,045,574; United States Tire Co. (New York), \$81,341; Washburn Wire Co., \$2,103,344; Woonsocket Rubber Co. (Woonsocket), \$499,898.

* * *

At the Revere Rubber Co., where the new 48-hour-week schedule has been in operation for more than a month, the management announces that it is very gratifying to note that the production has increased rather than diminished with greater concentration of efforts on the part of the workers since the company, when the working hours were curtailed, saw to it that the wage schedule was adjusted so that the income of the operatives would in no way suffer from the lessening of the working hours. In fact, the wages of all piece and day workers were raised about 12 per cent and a comparison, after the first month under the new schedules, shows that the factory force is making as much and in many cases more than they did under the old 54 or 55-hour schedule.

* * *

About the first of last month 75 of the salesmen of the branch stores of the United States Rubber Co., with a number of officials of the United States Rubber Co., spent a day studying the problems of rubber footwear manufacture at the factory of the National India Rubber Co. at Bristol. They were entertained by officials of the National company during their stay in Bristol, the only drawback being the cold and rainy weather.

The visiting salesmen were met at the depot by a delegation from the National office and escorted to the factory, where the forenoon was spent inspecting the making of shoes in detail from beginning to the end. Luncheon was served at noon, after which the young women of the company's office were partners for the salesmen at the short season of dancing to music by the factory orchestra.

About 2 o'clock automobiles conveyed the visitors on a tour of Ferry Hill, overlooking Mount Hope Bay, and the farm of Colonel Samuel P. Colt, at Pappasquash. Here the party inspected the big cattle barns with their herds of blooded stock. Returning, the visiting Westerners assembled at the Hotel Belvedere, where the salesmen listened to instructive talks by A. W. Lawrence and W. F. Enright, on fabric footwear and rubber shoes, respectively.

Different groups of the men who visited Bristol had been attending schools of salesmanship at the Boston Rubber Shoe Co., Malden, Massachusetts; The Goodyear's Metallic Rubber Shoe Co., Naugatuck, Connecticut; the L. Candee Co., New Haven, Connecticut; the American Rubber Shoe Co., Cambridge, Massachusetts, and Woonsocket Rubber Co., Woonsocket, during the preceding two weeks, and those who were billeted in the latter city presented a large silver loving-cup, engraved with the names of the donors, to George Schlosser, general manager. The cup is for the management of the Woonsocket Rubber Co., in recognition of the kindness bestowed on the salesmen during their stay in that city. Mr. Schlosser responded with a short address of thanks.

After the Regent talk a sumptuous dinner was served at the Belvedere, the dining room being elaborately decorated with flags, while in the hallway was a large banner, reading, "Welcome Salesmen." The large picture over the mantel was drawn by William Doran, and illustrated a group of salesmen on the beach admiring fabric shoes on the feet of a sand bathing-nymph. Led by the orchestra, the party sang popular and patriotic songs and three cheers were given for "Mine Host" Morrissey.

At 6 o'clock, despite the bad weather, a large number of the visitors embarked on the chartered steamer "Sagamore"

for a sail to Providence. On the steamer the orchestra furnished the accompaniment for singing, and "End-Men" Birt-whistle and Holt made a hit with selections from the National India Rubber Co. minstrels. Arriving in Providence, many of the party went to a theater, where reservations had been made, while others took late trains for home.

Ralph W. Holt, assistant to the General Manager, who had the local arrangements in charge, is to be congratulated on the success of the efforts of his committee.

The Woonsocket Rubber Co. has commenced the erection of a new two-story brick building at the plant of the Alice Mill, on Fairmount street, Woonsocket, to be used as an office building wherein will be concentrated all the executive and administrative offices. The new building will be 62 by 100 feet and will have an ell of one-story, 20 by 10 feet.

The loss sustained by the fire in the topping room of the shoe department at the National India Rubber Co., at Bristol, some weeks ago, has been adjusted by insurance inspectors from Boston and New York. They visited the plant, made a complete survey of the department where the fire was and computed the insurance on the stock and other material that was damaged by fire, smoke and water.

The second annual outing of the employees of the Davol Rubber Co. was held last month at Palace Gardens, near Rocky Point, and was attended by 600 employees and friends of the concern. A luncheon was served at noon and the clam-bake enjoyed at 3 o'clock. An athletic program, consisting of a three-legged race, a ladies' potato race, men's potato race, ladies' egg race, men's shoe race, ladies' 50-yard dash, men's 100-yard dash and a baseball game between the married and single men, featured the outing. The married men won the ball game by a score of 5 to 3. After the athletic events dancing was enjoyed, an orchestra furnishing music.

The Lynn Rubber Manufacturing Co., at Warren, Rhode Island, is doing an increasing business, and many shipments of rubber accessories to boots and shoes are being turned out. The company is now increasing its output of rubber heels and other boot and shoe accessories to such an extent that the factory may be operated night and day.

The partnership between George Cetenich and George Eukers, doing business as the George Eukers Tire Co., 97 Empire street, Providence, has been dissolved. The affairs are being settled by George Cetenich.

The Newport Tire and Tube Exchange has moved into larger quarters at 195 Thames street, Newport.

Joseph Bergel, of Providence, has filed his statement that he is sole owner of the Pawtucket Tire Exchange, 36 North Union street, Pawtucket.

The Elliott Tire Service, 9 Blackstone street, Woonsocket, is being conducted by Horace W. Elliott, of that city.

The Federal Felting Co. has decided to double the size of its plant on Canal street, Westerly, Rhode Island.

The Revere Rubber Co. has been granted a permit by the Inspector of Buildings to construct a two-story addition to its Valley street plant, Providence. The addition will be 100 by 25 feet, constructed of brick, of the mill type of architecture.

The Bourn Rubber Co., Providence, has commenced extensive

alterations in its boiler house on Fuller street in order to increase the steam capacity of the plant.

The Woonsocket City Council has awarded a contract to the Fabric Hose Co., Boston, for 500 feet of loose-fabric hose and 500 feet of cement-covered hose, each at \$1.05 per linear foot, which was the lowest of three bids submitted.

THE RUBBER TRADE IN NEW JERSEY.

By Our Regular Correspondent.

TRENTON RUBBER MANUFACTURERS report that the tire and tube trade is very good at the present time and they expect it to continue until cold weather sets in. Plants making rubber products other than tires and tubes report business as being fairly good. That Trenton rubber manufacturers are optimistic over the future is shown by the numerous plant additions contemplated and already under way. The Hamilton Rubber Co., Trenton, will erect a three-story steel and concrete addition, 75 feet square, to cost about \$20,000.

The Luzerne Rubber Co., Trenton, will erect a two-story factory building of brick, steel and metal sash, 75 by 50 feet, at a cost of \$13,000.

The Joseph Stokes Rubber Co., Trenton, is having erected a structural steel building, 100 by 50 feet, to cost \$8,500.

Herbert H. Coleman, of East Orange, New Jersey, president of the Delion Tire & Rubber Co., has returned from Europe with a large tire order from a French company that will keep the plant busy for some time.

Milton Cohn, formerly private secretary to John S. Broughton, president of the United & Globe Rubber Co., has been honorably discharged from the army and has been promoted to the position of traveling salesman for the United & Globe company.

The A. F. Updike Rubber Co., Trenton, has installed a vulcanizing department at its plant on East Front street.

Harry L. Boyer, manager of the Joseph Stokes Rubber Co., Trenton, has contributed \$100 towards the fund being raised for the family of a Trenton policeman who was slain. A number of other Trenton rubber men also gave to the fund.

The B. F. Goodrich Rubber Co., of Akron, Ohio has leased the six-story concrete and steel building at Park avenue and Fifteenth street, Hoboken. The building has 140,000 square feet of space and it is said that the rental for a term of years will aggregate more than \$500,000.

The Goodyear Tire & Rubber Co., Akron, Ohio, is having the four-story building at 500 Central avenue, Newark, New Jersey, altered extensively. The company will use it as a service station and main distributing branch. The improvements will cost \$15,000.

The Etablissements Bergougnan of Clermont-Ferrand, France, has recently purchased a fully equipped tire plant in Trenton, New Jersey, where the Bergougnan tire will be made. The French company is one of the oldest and best-known makers of automobile tires in Europe.

The Thermoid Rubber Co., Trenton, will build a new plant for the manufacture of tires, tubes, universal joints, rubber hose and other "Thermoid" products.

The Woven Steel Hose & Rubber Co., Trenton, is making molded air and water hose in long lengths. Horace B. Tobin is general manager of the company.

I. V. Jones, recently appointed superintendent of the Nearpara Rubber Co., Trenton, manufacturer of reclaimed rubber, has been connected with the rubber-reclaiming business since 1904, and was one of the first to develop a process for reclaiming auto tires. He was formerly master mechanic and chief engineer of the United & Globe Rubber Co., and previously was for a number of years factory manager for the Derby Rubber Co. The Nearpara company's plant is being remodeled and enlarged, and, when completed, will be a modern and up-to-date factory.

The John E. Thropp's Sons Co., Trenton, will build an addition of steel and brick, 63 by 320 feet, with 40-foot bay, covered by a 10-ton traveling crane, and a gallery 23 feet wide across one side and end. The cost is estimated at \$75,000. This expansion has been made necessary because of the increased business in the line of machines and mold equipment for manufacturing both automobile and truck tires. Some of the present equipment will be used in the new building in order to improve working conditions in the old.

The firm of A. W. Faber, Newark, New Jersey, by act of Congress, has been passed to the ownership of American inter-

B. Parsil, of Highland Park, Robert Montalvo, and Louis Kosma, superintendent of the Eckrode Rubber Co., of Newark, are the interested parties. The company has leased temporary quarters in the Landsberg building in New Brunswick and will later erect a plant for manufacturing purposes.

The members of the clerical force of the Lambertville Rubber Co., Lambertville, New Jersey, held their annual outing recently at that place. Following the banquet dancing was enjoyed.

The heavy rains caused damage to the Empire and Joseph Stokes rubber mills, Trenton, during the latter part of July. Both mills are situated along Assanpink Creek and the stream became so high that the lower floors of the plants were flooded. Work in portions of both mills was temporarily abandoned.

PACIFIC COAST NOTES.

By Our Regular Correspondent.

THE OLDFIELD TIRE CO. of Los Angeles has appointed Hess & Sackett, Inc., local distributor of their product. The Oldfield Company will still maintain its warehouse on Los Angeles street to serve the distributors in this and other counties of Southern California and Arizona.

Grove Hill, one of the best known "road men" connected with the motor tire business of Southern California, has been added to the organization of the J. B. Wood Tire Co., distributor of Hewitt tires in Los Angeles.

The Sewell Cushion Wheel Co., Detroit, Michigan, is planning to open Pacific Coast factory branches in Portland, Los Angeles and San Francisco.

F. A. Seiberling, president of The Goodyear Tire & Rubber Co., Akron, Ohio, has arrived in Los Angeles to take the first steps in building the Goodyear plant which is to be erected at Ascot Park, just acquired for that purpose.

Trinidad E. Lacayo, Nicaraguan Consul in Los Angeles, believes that the logical source of raw rubber for this district is in Central America, particularly Nicaragua. "There are thousands, yes, hundreds of thousands of acres of wild rubber in Nicaragua, which should be gathered and brought to this port," says Señor Lacayo. "In 1916 we exported 200,000 kilos of rubber, worth \$256,000, to the United States alone. Those are the latest authentic figures I have, but the amount of rubber now exported, I should say, is worth nearly \$500,000 annually, and this is only a fraction of what we produce. Nicaragua, the largest of the Central American republics, has an area of nearly 50,000 square miles, and a population of only 800,000. American business men should send representatives there, as they are doing in other South American countries, and study conditions as they are." Señor Lacayo was native secretary in the Philippines for Governors Taft, Wood and General Funston, at the same time representing his country there.

"Cliff" Durant, millionaire sportsman, motor car manufacturer and automobile racing champion, has announced that plans have been completed for a speedway to be built in Los Angeles, and a duplicate to be built in San Francisco. Two races yearly are planned to be held at each course, and no purse less than \$15,000 will be offered. The Los Angeles and San Francisco courses will be owned by the California Speedway Association, which will be incorporated for \$250,000. The local courses will be a mile and a quarter with a minimum width of 70 feet.



ON THE BOARDWALK AT ATLANTIC CITY AFTER THE OUTING OF THE RUBBER ASSOCIATION AT AMBROS. LEFT TO RIGHT—HENRY FERR, AL MYERS, HENRY FERR, JR., AND RICHARD WERTBERG.

ests and will be known as A. W. Faber, Inc. Henry Ferra, Jr., will remain general manager, with the same business organization. The company intends to maintain the high quality of its products and improve them wherever possible.

The Clark & Stebor Rubber Co., Inc., 709 Berkman street, Plainfield, New Jersey, recently incorporated to manufacture inner tubes, tire repair patches, etc., with a capital of \$200,000, has purchased the building at 332-334 Leland avenue for its factory and expects to be in operation in about two months. The officers are Lester P. Clark, president, and Anthony L. Stebor, Jr., inventors and patentees of the C. & S. patch in the United States, Canada, Great Britain and France, and W. G. Crossley, secretary and treasurer.

The Acorn Rubber Co., New Brunswick, New Jersey, has been organized for the purpose of manufacturing high quality automobile tubes and to engage in the vulcanizing business. R.

They will be of the triple-radius type permitting unlimited speeds in the long straight aways, and allowing for averages of better than 100 miles an hour.

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The B. F. Wade Tire & Rubber Co., Los Angeles, is now manufacturing 400 blow-out shoes and 120 reliners a day at its factory and plans to double these figures in a very short time.

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Fred S. Wilson, vice-president and Pacific Coast manager of the Thermoid Rubber Co., Trenton, New Jersey, is back at his office in Los Angeles after a serious illness of five months, during which he transacted most of his business from his bedside. He plans a visit to the factory during August and will take with him several of his coast representatives.

* * *

The Portland Rubber Mills. Portland, Oregon, are building a new concrete factory, 200 by 75 feet, to cost approximately \$100,000. Mechanical rubber goods, heels and soles are the lines in which the concern is expanding. It also does a jobbing business in mechanical rubber goods and leather belting. A branch store is operated in Seattle. The officers are H. C. Huntington, president and manager; M. E. Reed, secretary and treasurer; Henry L. Corbett, E. B. MacNaughton and C. E. McCulloch, directors.

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The Universal Tire Filler Co., Portland, Oregon, has found it necessary to increase its manufacturing facilities. A new plant for manufacturing fillers has recently been started in Vancouver, British Columbia. The installing station of the Universal Tire Filler Co. at Seattle, Washington, has been purchased outright by a syndicate of business men in that city and the Seattle force, with G. M. Fife as manager, will take charge of the company's operations at Vancouver.

The company will soon begin operations in the Middle West, probably locating at Indianapolis, Indiana. Frank A. Hager, general manager, G. W. German, local manager, and G. H. Gossett, superintendent, will supervise the erection of the plant, which will supply the Middle West and eastern trade.

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C. B. Clarke has been appointed retail distributor of United States tires and products in Portland, Oregon, succeeding C. E. Hamilton. For the past four years Mr. Clarke has been superintendent of the Portland Gas & Coke Co.'s garage.

* * *

Joseph G. Howell and Martin F. Swift of the Pacific Tire & Rubber Co., Portland, Oregon, will handle the Canton cord, and Blackstone fabric tires for that territory. Fred Hawley, one of the best known tire salesmen of Portland has joined the organization.

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The Washington Tire & Rubber Co., Spokane, Washington, manufacturer of "Evergreen" tires and tubes, is making a tire of solid black tread and side-wall construction in millimeter sizes, with an extra ply of fabric. It also contemplates undertaking the reclaiming of rubber in the near future. Spokane is fast developing as a rubber manufacturing center of the Northwest, in addition to being the location of branch organizations of several of the large eastern rubber manufacturers. The Washington Tire & Rubber Co. expects to increase its facilities to take care of its share of western business. The officers of the company are: A. G. Hanauer, president; H. S. Burdick, treasurer; R. C. Babbitt, sales director; and E. E. Harding, manager of production.

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Harry Schwartz, for eleven years with Charles T. Wilson Co., Inc., New York City, crude rubber importer, resigned in February last and has started in business as a crude rubber broker

at 131 Grand Trunk Dock, Seattle, Washington. A specialty is made of serving Pacific Coast manufacturers in a buying capacity, as well as inspecting crude rubber qualities for some of the leading eastern importers and manufacturers.

THERMOID'S PACIFIC COAST MANAGER.

FRED S. WILSON, vice-president and Pacific Coast manager of the Thermoid Rubber Co., Trenton, New Jersey, has been associated with the Stokes interests for 25 years, having entered



FRED S. WILSON.

the bicycle-tire department as an apprentice and subsequently been made foreman of it. After two years there he was placed in the sales department, traveling through eastern New York and Pennsylvania. Having served in that capacity for a few years, he was then made advertising and sales manager, which position he held for some time.

When the company decided to reach out for Western business Mr. Wilson took Chicago and the Middle West as his field of operations, and, having firmly established the business in that territory and become a leading factor in the Middle Western trade, he moved to the Coast, opening one branch and then another as the Coast business developed.

The Thermoid company now maintains branches at San Francisco and Seattle, which are under the personal direction of Mr. Wilson. By having an officer of the company located on the Coast it keeps its extensive trade in close touch with the management.

LONG-FIBER ASBESTOS FROM CALIFORNIA.

The American Asbestos Products Co., San Francisco, California, plans to erect a mill with a working capacity of 400 tons daily, twenty times its present output. Its asbestos-bearing



PLANT OF THE AMERICAN ASBESTOS PRODUCTS CO.

property consists of 600 acres of land on the banks of the Stanislaus River, 150 miles east of San Francisco, and it is estimated to contain millions of tons of the mineral, which runs high in quality, the fiber varying in length from one-half to one inch, suitable for spinning, while the short fiber and screenings are suitable for stucco, cement, and other purposes. The officers of the company are J. A. Voorhees, president; J. N. Morrison, vice-president; and Dr. F. P. Reed, secretary and treasurer.

THE GOODYEAR PACIFIC COAST FACTORY.

THE ANNOUNCEMENT by The Goodyear Tire & Rubber Co., Akron, Ohio, of its decision to erect a \$4,000,000 rubber manufacturing plant and a \$1,500,000 cotton mill in Los Angeles, California, is the most important industrial development in years on the Pacific Coast. All the preliminary details have been settled, the deeds have been placed in escrow for the large tract of land that has been acquired and ground has already been broken for the new enterprise. It is planned to have the plant in actual operation by next March.

The rubber company is capitalized at \$20,000,000 and the Pacific Cotton Mills Co. at \$5,000,000. Ascot Park in Los Angeles, famous for its many automobile races, was acquired by the company as the site for the rubber factory and additional acreage in the vicinity, amounting in all to 480 acres, was also purchased. The rubber plant will have a capacity of 3,000 tires a day, an annual business approximating \$15,000,000, and will employ 1,500 operatives.

The cotton mills, according to the present plans, will have 33,000 spindles, a capacity of 75,000 pounds of cord fabric and 75,000 pounds of woven fabric, an annual business of \$7,500,000, and will employ 1,200 operatives. It is planned to eventually expand both industries to four times the above capacities. The management of the company, in announcing its future plans, is looking forward not only to the increase in the demand for

automobile tires but also to the probable increase in the demand for many products requiring rubber and cotton.

In addition to the manufacturing plants the company will erect an industrial city, laying out a large area to be known as Goodyear Park, for a community settlement of its employees.

A tract of 160 acres has been set aside for the homes of the workmen. Landscape architects will supervise the improvement of the grounds with boulevards, trees, shrubbery, lawns, etc., and 800 fine houses will be built. The employees are to be permitted to purchase the houses on the instalment plan in payments of about the same amount as rent. No cheap houses will be built, and they will be varied in their style of architecture to make the general appearance of the district more attractive.

Very practical were the reasons that induced F. A. Seiberling, president of The Goodyear Tire & Rubber Co., and the other officers to take this epochal step. California and Arizona produce Egyptian and Pima cotton, and these long-staple varieties, with their superior tensile strength, are essential in the manufacture of high-grade automobile tires and other rubber products. The world's greatest rubber-producing districts are located in the Far East, and crude rubber can be brought across the Pacific to Los Angeles in ships flying the flag of the United States. Superior climatic conditions and freedom from labor troubles are cogent reasons for the coming of the great plant to Los Angeles.



PLAN OF THE GOODYEAR PLANT IN LOS ANGELES AND PORTRAIT OF F. A. SEIBERLING, PRESIDENT.

GOOD ROADS MOVEMENT IN CALIFORNIA.

The passage of the \$40,000,000 bond issue in California for the expansion of the state highway system, by a vote of more than 7 to 1, is an event of the greatest importance, not only to motorists, tire users and tire manufacturers, but to the good roads movement in general throughout the United States. California's highway system is already one of the best in the country, as the immense number of automobiles, stages and trucks in that state testify, but the construction of new highways will lead to the development of sections which have hitherto been inaccessible. Other states will undoubtedly follow the example of California, and a tremendous impetus to road building all over this country will be the result.

The present system of good roads in California makes it a territory where tires give unusual mileages. Tire performances which would be considered phenomenal elsewhere are common there. It is estimated that good roads extend the life of a tire by one-fifth. Figuring the cost of the average set of tires at \$100, and placing the average life of a set of casings at one year, then a saving of \$20 a year per car in tire cost may be attributed to good roads.

There are approximately 350,000 cars in use in California at present. A saving of \$20 a car per year on tires would mean \$7,000,000 saved in tire wear alone to California motorists. This saving would wipe out the entire bond issue in less than six years. The present year promises to be a banner year for good roads.

"DUNLOP 1919 GROOVED" NON-SKID TREAD.

The Dunlop Rubber Co., Limited, London, England, is producing a new non-skid tread design which is said to be highly effective as well as durable, due to the fact that the bulk of the tread rubber is placed along the line of greatest wear. This pattern is to be supplied on all future orders for grooved tires as fast as stocks become available.

NEW DUTCH TIRE FACTORY.

As a consequence of war conditions, making difficult the importation of tires into Holland, a new company called the Rubberfabrik "Vredestein," has been organized at Loosduinen, near the Hague, to manufacture pneumatic tires.

FRENCH IMPORT DUTY ON AUTOMOBILE TIRES.

Effective after July 12, 1919, automobile pneumatic tires, casings and inner tubes, imported into France from the United States are subject to a surtax of 10 per cent ad valorem in addition to the import duty of \$13.13 per hundred pounds net weight.

Under the minimum tariff, which applies to imports from the United Kingdom and certain other countries, the present rate is \$8.75 per hundred pounds plus 5 per cent ad valorem. Under a recent ruling automobile tires had been dutiable at the rate of 70 per cent ad valorem, together with automobiles weighing less than 2,500 kilos (5,509 pounds), and parts for the same, and this rate continues to apply to other parts when intended for automobiles weighing less than 2,500 kilos.

The Mid-West Rubber Manufacturers' Association.



JOHN W. MAGUIRE,
President.



JOHN T. CHRISTIE,
Vice-President.



PRESTON E. ROBERTS,
Secretary-Director.



A. V. CONRAD,
Treasurer.



C. WRIGHT.



B. B. FELIX.



MARSHALL D. WILBUR.



W. W. TODD,
Assistant Secretary.

OFFICERS AND DIRECTORS OF THE MID-WEST RUBBER MANUFACTURERS' ASSOCIATION.

THE MID-WEST RUBBER MANUFACTURERS' ASSOCIATION, organized some months ago with headquarters at Chicago, has already demonstrated the power and advantages of association effort when rightly directed. The monthly meetings are well attended, and, judging from the earnest discussions, the various members are striving to secure as much important information as possible concerning the problems that relate to the industry.

That there are many problems to be solved in the near future is a matter upon which all are agreed, and, as the industry is comparatively new in the Middle and Western States, the organization of this new association was a commendable move on the part of the manufacturers of that section.

Locating the association headquarters at Chicago makes it possible for the various members to attend the monthly meetings without incurring a great deal of traveling expenses. Most of the middle and Western manufacturers purchase much of their supplies in Chicago and hence meetings of the association can be attended and other business matters transacted on the same trip.

The idea of forming a Mid-Western association was evolved by John W. Maguire, general manager of the rubber department of the Brunswick-Balke-Collender Co. Mr. Maguire believed such an organization was necessary to represent the rubber manufacturers of that vast territory west of the Ohio river, and he found no difficulty in gaining other enthusiasts to the cause. Within the short space of three months the idea had developed into an active organization, with offices in the McCormick building and an efficient and enthusiastic management in charge.

It is probable that some manufacturers who have become identified with the rubber industry during the past two years do not fully appreciate the functions and importance of association endeavors. The fact that in practically every line of manufacture and in nearly every field of enterprise men have seen fit to form associations to protect and advance their combined interests is, in itself, conclusive evidence that the utility of associations is generally recognized. When governed by enthusiastic officials, and when energy and intelligence dominates, a manufacturers' association can frequently find means to bridge difficult chasms

which would greatly perplex an individual manufacturer if left to himself.

The Mid-West Rubber Manufacturers' Association has started its first year with a strong organization of officials and directors. Each seems anxious to further the power and importance of the Association and is willing to lend his time and ability to the cause. Various features of advantage will be developed by the officials in charge and the members will, without doubt, fully recognize and appreciate what is being accomplished in their behalf when they realize the results of the association's endeavors.

The following are the officers and directors for the ensuing year: John W. Maguire, president; John T. Christie, vice-president; Preston E. Roberts, secretary; W. W. Todd, assistant secretary; A. V. Conrad, treasurer; directors, John W. Maguire, chairman, the Brunswick-Balke-Collender Co.; John T. Christie, Hawkeye Tire & Rubber Co.; Preston E. Roberts, Perfection Tire & Rubber Co.; A. V. Conrad, Kokomo Rubber Co.; Marshall D. Wilber, Palmer Tire & Rubber Co.; C. Wright, Racine Auto Tire Co., and B. B. Felix, Featheredge Rubber Co.

NATIONAL ASSOCIATION OF WASTE MATERIAL DEALERS, CLASSIFICATION FOR SCRAP RUBBER.

CIRCULAR E.

THIS STANDARD OF PACKING was adopted by the Scrap Rubber Division and approved by the Executive Committee of the Association on June 17, 1919, to be effective from July 1, 1919, to July 1, 1920, at which date a new circular will be issued.

All goods bought or sold under the following specifications are understood to consist only of domestic or Canadian manufacture, unless otherwise stipulated. All grades of scrap rubber shall be bought and paid for net weight, mill weights to govern, and no allowance for bagging or covering of any kind shall be made, nor shall the same be returned to the seller.

DELIVERY.

- A.—All shipments of scrap rubber must be contained in bags, bales, bundles or other suitable containers, and if shipped loose a charge of 1 cent per pound shall be made for extra handling, except automobile tires and railroad hose which may be shipped loose.
- B.—1. A car load, unless otherwise specified, shall consist of fifteen tons.
2. A ton when applied to domestic stock shall mean 2,000 pounds. A ton when applied to foreign stock shall mean 2,240 pounds.
- C.—Shipments direct to a mill shall consist of not less than 2,000 pounds. Otherwise a charge of 1/2 cent per pound shall be made.
- D.—All scrap rubber of foreign manufacture shall be bought C. I. F. port of entry as per weight determined by sworn weigher's certificate, seller to bear expense of weighing, and shall be subject to same conditions as govern purchases of domestic manufacture.

REJECTIONS.

E.—Upon his request all objections shall be returnable to the seller within thirty days from the time notice of rejection is received by him and upon payment by him of 1/2 cent per pound to cover cost of sorting and rebaling. If shipping instructions are not furnished within the above mentioned thirty days the purchaser shall be at liberty to make such disposition of the material as he may see fit. The above does not apply if rejected material is purchased by the buyer.

F.—When shipments are made direct to a mill each grade of scrap rubber must be packed separately, and if not so packed a handling charge of 1/2 cent per pound will be made.

G.—All scrap rubber must be dry and free from dirt. All scrap received wet must be dried by the buyer, such shipments to be paid for on the dry weight as ascertained.

H.—A purchase contract shall not be considered filled until the full quantity within 2 1/2 per cent, more or less net weight shall have been received. Rejection may be placed within thirty days of the date of notice of rejection to the shipper.

EMBARGO.

I.—If through embargo a delivery cannot be made at the time specified the contract shall remain valid and shall be completed immediately on the lifting of the embargo, and terms of said contract shall not be changed. Notice of embargo must be served by seller.

Code words appear in italics.

1.—RUBBER BOOTS AND SHOES (*Aere*). The deliveries of rubber boots and shoes must consist of rubber boots and shoes of domestic or Canadian manufacture. Red, white, tan, and fancy colored shoes are not a good delivery. They must be dry and free from dirt. All cloth tops, trimmed or untrimmed, and soles or heels of rubber boots and shoes from which the uppers have been removed shall not be accepted as a good delivery.

1.-(a)—COLORED RUBBER BOOTS AND SHOES. All rubber boots

and shoes which are not black must be packed and sold separately, the grading and packing to conform to Article 1.

2.—TRIMMED ARTICLES (*Bandi*). Must be closely trimmed and free of leather.

(a)—UNTRIMMED ARTICLES. Must be free from leather.

3.—TRIMMED TENNIS SHOES (*Clam*). Must be black; closely trimmed; free from molded soles and leather.

(a)—UNTRIMMED TENNIS SHOES. Must be free from leather and molded soles.

4.—STANDARD MIXED GRAY AUTO TIRES (*Dinky*). Must be free from the following: All jet black tires, unguaranteed tires, heavy beaded tires, non-pneumatic or filled tires. Must not contain any hard, oxidized, burnt, single tube, motorcycle, stripped or badly worn tires, not tires containing leather or metal.

(a)—JET BLACK AUTO TIRES. Must be free from all gray tire, unguaranteed tires, heavy beaded tires, non-pneumatic or filled tires. Must not contain any hard, oxidized, burnt, single tube, motorcycle, stripped or badly worn tires nor tires containing leather or metal.

5.—GUARANTEED TIRES (*Earl*). Must be free from heavy beaded tires, hard or oxidized, stripped, badly worn, and tires with leather and metal.

6.—HEAVY BEADED TIRES (*Farm*). Must be free from hard or oxidized tires, single tube, badly worn and tires with leather and metal.

7.—DAILY WORN TIRES (*Game*). Must be free from hard or oxidized tires, heavy beaded and tires with leather and iron. A reasonable proportion of the tread must be on the tires.

7.-(a)—STRIPPED TIRES. Must be free from hard or oxidized tires, heavy beaded and tires with leather and iron.

8.—No. 1 GRAY AUTO TIRE PEELINGS (*Hawk*). Must be free from cloth, metal, leather and jet black peelings.

8.-(a)—No. 1 JET BLACK PEELINGS. Must be free from gray peelings, cloth, metal and leather.

9.—No. 2 GRAY AUTO TIRE PEELINGS (*Iced*). Must consist of peelings from auto tire treads only and must be free from leather, metal, stripped auto tire fabric and jet black peelings; also free of leadless auto tire stock, from which fabric has been pulled, known as Dykes or Dykes peelings.

9.-(a)—No. 2 JET BLACK PEELINGS. Must consist of peelings from auto tire treads only and be free from leather, metal, stripped auto tire fabric and gray peelings, known as Dykes or Dykes Peelings.

10.—BICYCLE TIRES (*Jade*). Must be free from hard or oxidized tires, wire and beaded tires.

11.—SOLID WAGON AND CAB TIRES (*Kite*). Must be free from metal, baby carriage and cushion tires.

12.—SOLID MOTOR TRUCK TIRES (*Lamp*). Tires must be 2 1/2 inches or over in diameter. Must be free from metal and tires with hard base and fiber bases.

13.—AIRBRAKE HOSE (*Mark*). Must be free from metal, hard or oxidized hose and steam hose.

14.—GARDEN HOSE (*Nail*). Must be 1/2 inch or over in diameter and free from metal, rags, rope and cotton-covered hose.

15.—LARGE HOSE (*Oven*). Large hoses must be one inch or over in diameter. Must be free from metal, rags, rope, hard or oxidized hose and all cotton covered hose.

16.—COTTON-COVERED FIRE HOSE (*Park*). Must be rubber-lined and free from metal or oxidized hose.

17.—No. 1 AUTO INNER TUBES (*Quis*). Must be strictly pure gum, live floating tubes, free from crusty tubes, cloth, metal, red and cloth patches.

18.—No. 2 AUTO INNER TUBES (*Race*). (Known as Compound Tubes). Must be standard tubes, free from crusty tubes, cloth, metal, red and cloth patches.

19.—No. 1 BICYCLE INNER TUBES (*Salt*). Must be strictly pure gum, live floating tubes, free from crusty tubes, cloth, metal, red and cloth patches.

20.—No. 2 BICYCLE INNER TUBES (*Train*). (Known as compound Tubes). Must be standard tubes, free from crusty tubes, cloth, metal, red and cloth patches.

21.—RED AUTO INNER TUBES (*Urra*). Must be standard tubes, free from punctured, crusty tubes, cloth, metal and cloth patches.

22.—No. 1 WHITE RUBBER (*Vase*). Must consist of strictly clean white soft drugists' sundries and must be free from cloth and metal.

23.—No. 2 WHITE RUBBER (*Ward*). Must consist of white horse-shoe polish, white shoe polish, white shoe polish goods, and to be free from cloth, metal, crusty, hard or oxidized material, and white soles and heels.

24.—No. 3 WHITE RUBBER (*Ware*). Must consist of painted white rubber balls or toys from which the paint has been removed, and to be free from cloth, painted wainscoting, metal and hard or oxidized rubber.

No. 4 WHITE RUBBER. Must consist of white jar rings and be free from cloth, metal and hard or oxidized rubber.

25.—WHITE WRINGER RUBBER (*Wren*). Must be strictly white soft rubber, free from yellow wringer rubber, hard or oxidized wringer rubber, cloth or metal.

26.—YELLOW WRINGER RUBBER (*Xray*). Must be free from cloth, metal and hard rubber.

27.—MIXED BLACK RUBBER (*Yabe*). Must be free from cloth, metal, crusty, hard or oxidized material, packing, stripped matting, tiling, baby carriage tires, soles and heels.

28.—MATTING AND PACKING (*Zero*). Must be free from Garlock, Crandall, and piston packing, belting and similar material, metal and hard or oxidized stock.

29.—No. 1 RED RUBBER (*Yean*). Must consist of soft red drugists' sundries, free from maroon, chocolate, and other dark shades, also free from cloth and metal.

30.—No. 2 RED RUBBER (*Yent*). Must consist of material such as red toys, balls, mechanical red. Must be free from jar-rings, packing, hard or oxidized rubber, cloth, metal, soles and heels, and maroon and chocolate.

31.—RED PACKING (*Yarn*). Must be free from hard or oxidized rubber, cloth and metal and discolored rubber and free from graphite packing.

THE EDITOR'S BOOK TABLE.

COMMERCIAL OILS, VEGETABLE AND ANIMAL WITH SPECIAL Reference to Oriental Oils. By J. F. Laucks, B. S. M. S. First Edition, 1919. John Wiley & Sons, Inc., New York. Chapman & Hall, Limited, London. (Cloth, 4 in. x 7 in. inches, 138 pages.)

THIS valuable little book is intended primarily for the non-technical man in the oil trade. It gives the technical data and information required in every-day dealings in the oil trade, omitting more or less scientific matter.

The book contains four chapters; in the first, oils are classified according to Lewkowitsch, their general properties and physical and chemical characteristics briefly described, together with the preparation of oils and fats from their raw materials.

The second chapter is devoted to the detailed descriptions of the sources and characteristics of over sixty kinds of commercial oils, including vegetable, fish, marine and terrestrial animal oils, and waxes.

In the final chapter the uses of oils are briefly discussed and much interesting information is given. Reference is made to blown oils and the sulphurized oils used as rubber substitute; also to the less well-known fact that nitrated oils are used as rubber substitute.

The book concludes with a tabulation of the properties of many of the less common oils, weights per gallon of oil, etc., and a comprehensive index. It will be appreciated as a handy book of reference by the chemist as well as by the practical dealer in oils.

OFFICIAL REPORT OF THE SIXTH NATIONAL FOREIGN TRADE Convention. Issued by the Secretary of the National Foreign Trade Council, 1 Hanover Square, New York City. Octavo, 650 pages. Cloth. Price \$2.

Under the title of "Official Proceedings of the Sixth National Foreign Trade Convention," the National Foreign Trade Council has issued a text-book on foreign trade, replete with information, advice and suggestion. This volume is a stenographic report of the proceedings of the convention held in Chicago April 24-26, 1919.

Representing all parts of the world and all factors in foreign trade, from the production of raw material to the transportation of the finished article, the deliberations and conclusions of this gathering are entitled to the most serious consideration. Especially is this true of the final declaration of the convention, printed at the front of the volume, in which the conclusions of the convention are set forth in a comprehensive legislative program, the first of its kind definitely laid down by the business men of the country.

NEW TRADE PUBLICATIONS.

THE PUBLICATION OF HOUSE ORGANS OR EMPLOYEES' PAPERS is a most helpful feature of welfare work. The "C.-H. Messenger," published "for all Cutler-Hammer employees" comes from the Milwaukee, Wisconsin, office of the manufacturing company of that name. The Independence Day issue, printed in red and blue, contains the names of nearly 300 employees who served their country during the war, and shows half-tone portraits of many of them. The little paper is replete with personal notes and factory news, besides contributions from the various branch offices of the Cutler-Hammer Manufacturing Co. in other cities.

"RUBBER LEAVES" COMES TO THIS OFFICE AS A BOUND VOLUME containing twelve numbers of a handsome little house-organ published by the London Rubber Co., Aberdeen, Scotland, for distribution to its customers. The earlier numbers contained eight pages, some of the later ones 12 pages of deckle-edge paper with heavy covers. There are timely hints to dealers, breezy business advice, information about rubber and rubber processes, sketchy stories with practical business points and advertisements of the specialties of the company, the whole artistically

printed, with illustrations in half-tone on glazed paper "tipped in." The volume is bound in half leather, and is well worth a place in the editorial library.

* * *

THE RUBBER PRODUCTS CO., BARBERTON, OHIO, IS SENDING OUT a large circular, which can be utilized as a window poster to advertise its "Stronghold" tires, one side being printed in large type for quick reading, and showing a half-tone cut of the tire at least half actual size. The other side shows the magnified structure of the tire, with appropriate diagrams, half-tones and explanation. Another section pictures and describes the inner tubes made by the company.

* * *

"WE WELCOME FAIR COMPETITION" IS THE TITLE OF A CIRCULAR issued by the Portable Machinery Co., Inc., Passaic, New Jersey. It tells how another firm is trying to market an imitation of the scoop conveyor and warns possible purchasers, as a suit for infringement of patent rights is now pending.

* * *

THE RUBBER DEPARTMENT OF R. T. VANDERBILT CO., 50 EAST 42nd street, New York City, is sending to rubber chemists, superintendents and purchasing agents, valuable information in loose-leaf note-book form.

* * *

BULLETIN No. 22, ISSUED BY WELLMAN-SEEVER-MORGAN CO., Cleveland, Ohio, comprises three charts giving the relations in any shaft between power, shaft diameter, torsional stress, and speed.

* * *

THE BUFFALO FOUNDRY & MACHINE CO., BUFFALO, NEW YORK, has published for distribution a concise 36-page "Popular History of the War," by Merton M. Miller, assistant editor of "The Buffalo Express." The booklet includes excellent maps of the various war fronts and a daily chronology, and is altogether worthy of preservation for ready reference.

* * *

GUTTA PERCHA & RUBBER, LIMITED, TORONTO, CANADA, HAS published a very neat little pamphlet picturing and describing the decorations of honor which have been and are being awarded by the British and French Governments for bravery, distinguished service or conspicuous gallantry during the Great War. Each is shown with the appropriate ribbons pictured in natural colors, while a history of the decoration, the requirements for its award and other facts are given. The company confines its advertising to a few pages at the beginning and end of the book. The publication is small enough to fit in the pocket, and is therefore convenient to identify such decorations, and gives information as to the reason for their award.

* * *

THE OAK TIRE & RUBBER CO., LIMITED, TORONTO, CANADA, SENDS OUT "The Story of the Royal Oak Tire" in handsome pamphlet form, illustrated with half-tone cuts, showing processes of manufacture. The full details of manufacture, from the crude rubber to the finished tire are described and pictured, the whole enclosed in a terra-cotta double cover, the outer one bearing the legend "Tougher than Oak," an outlined landscape and an embossed representation of the tire.

* * *

THE GOODYEAR TIRE & RUBBER CO., AKRON, OHIO, SENDS TO garage owners and tire dealers, a monthly paper entitled "Goodyear Tire News," and another, "The Goodyear—a Family Newspaper," to the branch office of the company and to the employees. The former gives news of Goodyear products, racing news, practical hints on tire repairing and for sale, wanted and business opportunity items. The news items are copiously illustrated with half-tones, and the paper is one which any tire dealer will appreciate.

The "Goodyear—a Family Newspaper"—is devoted to factory

news and matter of interest to members of the lag Goodyear family. Both publications are well printed and filled with items of interest to its chosen line of readers.

THE BREEZE MANUFACTURING CO., NEWARK, NEW JERSEY, HAS published a catalog of its flexible metal hose, tubing and accessories, which contains a large amount of information, technical and commercial, of the manufacture, advantages and uses of metal over rubber for certain purposes. It shows the construction of its all-metal hose and tubing, and the method of combining the imperviousness of rubber with the strength of metal in the hose which contains both. In some of the latter, the spiral metal is so formed that the continuous joint is packed with rubber, in others a special rubber covers the metal hose, and this in turn is covered with duck, with an outside of woven cotton duck, while others have an inner tube of rubber, surrounded by the spiral metal covering. There are other forms, each pictured and described, as are also a large number of flexible shafts, couplings valves and accessories.

* * *

THE FIRST ISSUE OF THE "BULLETIN OF THE NATIONAL Association for the Protection of American Rights in Mexico" has appeared, dated July 1, 1919. It sets forth the origin and aims of this organization, contains much timely information regarding Mexican conditions, and echoes editorial voices throughout the United States, emphasizing the necessity for early Congressional action relative to the Mexican situation.

"THE DIGEST," THE MONTHLY ORGAN OF THE MOTOR AND Accessory Manufacturers' Association, came to hand last month in an enlarged form, new dress, and a new editorial policy, the dissemination of news and general information of importance and interest to the manufacturers of motors, parts and accessories for the automotive industry of the United States. Editor M. Lincoln Schuster is striking for a high ideal, and this initial number, under the new policy is evidence of real progress toward its attainment.

RUBBER TRADE INQUIRIES.

THE inquiries that follow have already been answered; nevertheless they are of interest not only in showing the needs of the trade, but because of the possibility that additional information may be furnished by those who read them. The editor is therefore glad to have those interested communicate with him.

(722.) A manufacturer inquires concerning the nature of the cotton fiber used in composition rubber and fiber soles.

(723.) A request has been received for the addresses of golf-ball winding-machines.

(724.) Information is desired concerning a mealy white powder known as Ednoid.

(725.) A reader has inquired for the "Redmond" brand of tires.

(726.) A subscriber requests the addresses of manufacturers of tire flaps who are prepared to make immediate deliveries.

(727.) Information is desired as to who manufactures the Mathern tire-building machine.

(728.) A subscriber requests information as to how brass valves may be cemented into air retainers.

(729.) The addresses of manufacturers of machines for punching holes for valve bases in tube are requested.

TRADE OPPORTUNITIES FROM CONSULAR REPORTS.

Addresses may be obtained from the Bureau of Foreign and Domestic Commerce or its district or cooperative officers. Request for each should be on a separate sheet, and state number.

(29,725.) The purchase and agency for the sale of bicycle parts, tires and accessories is desired by a wholesale firm in

France. Cash on receipt of merchandise. Correspondence in French.

(29,738.) Rubber, reclaimed rubber, chemicals, sheetings, hosiery, rubber machinery and rubber-makers' tools.

(29,812.) A firm in Australia desires to purchase an agency for accessories and tires. Terms, cash against documents or 90 per cent 120 days after sight; also consigned stock to be paid as sold.

(29,816.) A firm in Trinidad, with agents in this country, desires to be placed in touch with manufacturers and exporters of automobile tires and accessories; also cycle accessories.

(29,833.) Agencies are required by a firm in Brazil for the sale of tires and rubber goods. Correspondence in English.

(29,872.) A commercial agent from Norway, who is in the United States, desires to secure agencies for the sale in his country of rubber overshoes and all kinds of rubber goods.

(29,876.) The purchase of crude rubber is desired by a company in Norway. Cash against documents.

(29,881.) Large quantities of rubber heels are required by an importer in Belgium. Quotations c. i. f. Belgium port. Correspondence may be in English.

(29,886.) A merchant in Italy wishes to represent exporters of druggists' and surgical rubber sundries. Correspondence in Italian.

(29,931.) A merchant from France who is in this country desires to purchase rubber goods from manufacturers only for Roumania.

(29,948.) A firm in Persia desires to purchase rubber overshoes. Quotations should be given c. i. f. Persian port. Payment upon arrival of goods. Correspondence in French.

(29,956.) An importer in Switzerland desires to purchase rubber shoes. Quote c. i. f. Rotterdam or Genoa. Cash against documents. Correspondence in German.

(29,968.) A Belgian firm desires to purchase rubber shoes. Quote c. i. f. Antwerp. Cash against documents. Correspondence may be in English.

(29,984.) An American firm desires to secure from manufacturers of rubber machinery the sole agencies for Dutch East Indies. Cash against documents in the United States.

THE OBITUARY RECORD.

GENERAL SUPERINTENDENT OF WESTINGHOUSE SHOPS.

OSCAR OTTO, general superintendent of the Westinghouse Electric & Manufacturing Co. plant at Essington, Pennsylvania, died June 30, the result of an automobile accident three days previous.

He was born in Manitowoc, Wisconsin, January 2, 1859, and as a young man served an apprenticeship in the machine shops of the Chicago & Northwestern Railway, working at his trade in various Wisconsin cities, later going to the Northern Pacific Railroad shops in Tacoma, Washington, and the Oregon Short Line shops at Salt Lake City, Utah.

He came East in 1898 to superintend the shops of the Chicago & Northwestern Railway at Chicago, Illinois, which position he held until June, 1909, resigning to accept the position of general superintendent of the Westinghouse Machine Works at East Pittsburg, Pennsylvania. When this concern built its new plant at Essington he supervised the installation of the machinery there, and later, in February, 1918, was transferred to that plant as general superintendent. He is survived by his widow, a daughter and three brothers.

ALBERTA GLENN SUTHERLAND, WIFE OF HARRY S. VORHIS, formerly secretary of The Rubber Association, recently died at the home of her mother in Waltham, Massachusetts. Mrs. Vorhis was 30 years of age and had been an invalid for some time, having spent the past year at Saranac Lake, New York. To Mr. Vorhis the sympathy of his many friends in the trade is extended.

The Rubber Trade in Great Britain.

By Our Regular Correspondent.

IT IS NOW RECOGNIZED that the prognosticated rise of one shilling per pound in raw rubber on the ratification of peace is unlikely to occur. Owing to the large stocks in England, America, and Singapore it is evident that the demands of the Central Powers, large though they may be, can easily be met without undue pressure on the market, though it is expected that the price may go up three or four pence per pound. Of course things would have been different if the output had been stringently reduced, but with the large output not interfered with by the war the present level of prices was only to be expected.

With new rubber at 1s. 8½d. per pound and oil substitute up to 10d. per pound it is not surprising that there has been a lessened demand for the latter from such branches of the trade as are customarily large users. The position of the substitute trade will also not be rendered any easier by the reimposition of government control over oils, owing to the profiteering which has come into play since restrictions on trading were removed.

WATERPROOF CAP COVERS.

The proofing branch is now almost wholly occupied again on civilian work, new government orders having ceased. One question of the movement is the disposal of large quantities of special goods, such as waterproof cap covers, which the authorities evidently think it is not worth while putting into store. Considering the short time in which such goods were ever used by troops in active service it seems a pity that they were made to such high-class specifications; many of the manufacturers, I understand, advocated a lower quality as being quite good enough to answer the purpose required, but their representations appear to have been unavailing. As regards cap covers, there does not appear to be any public demand for them which would encourage a merchant to bid for those at disposal, and it would seem that their ultimate destination is the reclaimers' works. This sort of thing is not peculiar to the rubber trade, because we hear of metal goods and chemicals that appear to have no market but the scrap heap.

SOLVENT NAPHTHA.

The cessation of war work has resulted in a considerable fall in the price of solvent naphtha, present quotations being 1s. 10d. to 1s. 11d. per gallon. I note that the American figures for solvent naphtha and benzol have also been much reduced, and are now lower than they were. This was only to be expected considering the great increase in the output during the last five years. This fall in the price of solvent cannot be without its effect upon the various proposals with regard to the recovery of solvents in rubber works. It is well known that very little has been done in this way in the past because the matter is not so simple as it appears to be. The subsidiary advantage that it rendered the atmosphere of the spreading rooms much more pleasant for the war-people did not appeal with any force to manufacturers who held the opinion that the recovery plant could be worked only at a loss. Such a plant has, however, been adopted in several cases by card clothing manufacturers, the machinery having been put in thirty or, perhaps, forty years ago by the Liverpool firm of Siddley & Co., Limited, not now in existence.

These machines work with ether, and are of a type which is now chiefly found in tropical countries. The reason why the card-clothing manufacturers with their limited number of spreading machines were more attracted by solvent recovery plants than were the rubber proofers was because the refrigerating plant was also used for freezing the blocks for cut sheet and

for supplying cold water to the cutting machines. The actual recovery of naphtha does not exceed 30 per cent of the original naphtha used. Proposals, I hear, are now before the rubber trade in which a plant will be erected on a new system giving a guaranteed recovery of a higher figure, and the matter is therefore one worth careful consideration by the trade.

I do not know the details of artificial leather manufacture, and it may be that the process which is said to be giving satisfactory results in American artificial leather works may not work equally well in a rubber works. At any rate, after the stagnation of the last 30 years it is interesting to hear of the problem being resolutely tackled again and by those who express themselves as confident of its proving a financial success.

CABLE WORKS CHANGES HANDS.

The old-established insulated cable works of Connolly Brothers, Limited, Blackley Vale Mill, near Manchester, was sold at auction on June 17, 1919, as a going concern. The sale was by order of the High Court resulting from the action of Wood vs. The Company, 1911, and should have taken place some years ago. During the war, however, the concern has been profitably worked by a receiver and a great deal of government work has been carried out. At one time the firm bought its prepared rubber from rubber manufacturers, but at a later date, as in the case of other insulated wire firms, it installed its own rubber machinery. All of the buildings and plant were included in the sale, the stock to be taken over by the purchaser at the auctioneer's valuation, the probable figure for this being put by the auctioneer as somewhere in the neighborhood of £20,000.

With regard to the Vogelsang patents, which had been worked by the firm at a royalty amounting in recent years to about £1,000, it was stated that an arrangement had been made by which the purchaser of the works would have the benefit of the patents without any further payment of royalty. The rubber calenders and the Krupp lead-covering machine were singled out for special mention by the auctioneer, the latter being a machine of high merit which cannot be duplicated, and special reference was made to the enameling processes for which the company has long been noted and the details of which will pass into the purchaser's possession. Although there was a crowded attendance at the sale it was soon clear that the bidding was restricted to two, who raised the initial bid of £15,000 to £35,500, at which figure the concern was sold.

CALLENDER'S CABLE CO., LIMITED.

The annual report shows a profit on the last year's working of £134,968 compared with £121,784. The dividend of 12½ per cent is really the same as that of 25 per cent declared last year as the capital has been doubled by the distribution of bonus shares from the reserve. The report lays stress on the trading difficulties likely to be experienced, but is couched in an optimistic vein. The shareholders have nothing to complain of in the present report, though some of them expected to receive more. At the present quotation for the £5 shares, the return is 6¼ per cent.

GOVERNMENT OWNERSHIP.

The editorial under this heading in the June issue of THE INDIA RUBBER WORLD seems very apposite in these Bolshevistic days when everyone is wanting more money for doing less work, and labor is clamoring for the nationalization of this and that industry under the idea that all will be well if the private capitalist is done away with. One may be excused for referring to the topic because, in these parlous days, if you meet a man in the rubber trade, the conversation does not, as of old, run on tech-

nical matters, the markets and so on, but rather on labor problems and where they are going to land our past industrial position. There is no doubt that the borrowed money so lavishly paid by all the belligerents to war workers has had a very unsettling effect upon labor, and it seems to me that much more might have been done by speeches or the issue of free pamphlets to bring home to the people certain of the laws—if we may call them so—of economics.

The opinion is largely held that if a government can find at once as many millions as it wants for war time, it may as well go on doing so in peace time and let everybody be well off. Very little has been done to controvert such fallacious reasoning, and in general too much of the talking has been left to the labor agitator. I gather from the article referred to that nationalization of industries is being advocated in America, so we seem to be in the same boat, though America has this advantage that her labor does not make a fetish of restricted output such as is prevalent in this country.

BRITISH PETROLEUM.

It looks as if the petroleum requirement of the rubber trade will soon be satisfied from home stills. The large refinery of the Anglo-Persian Co. at Swansea is nearing completion, and there is a lot of excitement about the government borings in Derbyshire, where the oil is now flowing in quantity from one of the wells. This oil is not to be distilled in the local surroundings where it is obtained, but is to be sent to Scotland for treatment at the headquarters of the Scotch oil shale industry. As a solvent I may say that petroleum spirit has never been generally used in our rubber trade, preference having been given to coal-tar naphtha and shale naphtha which have always been available in quantity.

SYNTHETIC RESINS.

The paragraph on "Redmanol" in the June issue of THE INDIA RUBBER WORLD is of more interest to the rubber trade, more particularly the vulcanite branch, than is perhaps generally recognized. Since the first patents of Bakeland in 1909, a considerable amount of work has been done in America and Germany on synthetic resin and quite recently research has been devoted to the subject in England. Whether there are any patents that would withstand an action at law seems rather doubtful. There are now, however, a large number of processes based on the original Bakeland reaction of condensing phenol with formaldehyde. Redmanol, I gather, is formed from phenol and hexamethylene tetramine, and its physical properties appear to be of a high order.

The list of uses to which these synthetic resins will be put is undoubtedly destined to be far longer than is at present the case, although they have already replaced vulcanite in many of its applications to quite a large extent. It is a matter of scientific interest how very completely the phenol or carboic acid loses its distinguishing smell when it is converted into the hard resinous body. Under certain conditions of use, however, such as excessive heat and friction, the smell reasserts itself, and I have heard of complaints being made on account of this. Like rubber, these synthetic resins can be compounded with mineral matter or other inert organic matters though this has to be done before the material attains the condition in which it is described as being as hard as steel.

MISCELLANEOUS FOREIGN NOTES.

PIRELLI CABLE SHIP LOST.

ON JUNE 17 THE CABLE SHIP *Città di Milano*, formerly the property of Messrs. Pirelli, of Milan, Italy, and Southampton, England, struck a rock and sank in the Straits of Messina with a loss of twenty-six lives. Among the deaths reported are those of Italo Brunelli, general inspector of Italian Posts and Telegraphs; Professor Jona, one of the leading authorities in high-

tension work, and Signor Pinelli, of the Pirelli staff of experts. Through the prompt assistance of other vessels 101 of the crew were saved. When Italy entered the war the Government took over the Pirelli cables, and at the time of the disaster Messrs. Pirelli had chartered her from the Italian Navy in order to lay a submarine cable for the Italian Government.

GERMAN SYNTHETIC RUBBER.

Early during the war period German manufacturers were overwhelmed with the call for batteries for submarines. The larger types required batteries of 220 cells of 4,500 hours' capacity, weighing 80 tons and costing about 250,000 marks. During 1917 there were placed in service 86 submarines, and in 1918, 10 to 14 under-sea boats were added monthly. With practically no crude rubber, the need was serious, but F. Bayer & Co. produced a synthetic rubber which successfully substituted the genuine gum in the manufacture of battery boxes. This firm produced about 150 tons monthly, at a cost of 37 marks per kilo (\$3.96 per pound).

The "Tagliche Rundschau" states that the Bavarian Postal Administration has been experimenting with tires of synthetic rubber on its post automobiles, and has pronounced the result satisfactory, as far as service is concerned, but that the cost of raw material is much higher than that of natural rubber. The material is manufactured in Bavaria exclusively by the electrochemical industry.

A RUBBER FACTORY IN CHINA.

The proposed rubber factory in China will use Malayan plantation rubber and Chinese cotton fabrics and manufacture rubber boots and shoes and hard and soft rubber sheets for electrical rubber goods. The manufacture of cycle and motor car tubes and tyres is contemplated.

CRUDE RUBBER STANDARDS BASED ON TECHNICAL EXAMINATION.

Regarding the pamphlet entitled "Conditions Governing Singapore Standard Qualities," issued by the Chamber of Commerce at Singapore, Dr. A. Van Rossem, director of the Netherlands Government Information Service, states that the following specifications are apparently based upon a superficial examination of the rubber.

18. First latex crepe shall be well prepared dry rubber of good quality, of even color, and free from all stains, spots or traces of oxidation.

19. F. A. O. ribbed smoked sheet shall be clean, tough rubber, free from oil, dampness, under or oversmoked sheets. Slight traces of air bubbles may be allowed, but at the discretion of the Standard Qualities Committee.

Those engaged in the examination of crude rubber on a technical basis have come to the conclusion that the quality of crude rubber cannot be judged by its outside appearance only; on the contrary, in many cases the quality of the rubber can be judged only by vulcanization experiments.

The best proof is that the producers in Java, Sumatra, and also the Federated Malay States, conduct rubber experiment stations to improve upon the manner of preparation by making technical examinations of the prepared product. Both the Central Rubber Station at Buitenzorg and the Department of Agriculture at Kuala Lumpur (Federated Malay States) possess a complete technical installation for the examination of rubber, while the General Experiment Station of the A. V. R. O. S. at Medan, Sumatra, is installing a laboratory for the benefit of the rubber plantations.

In this connection, a report from E. Baillaud, Secrétaire Général au Conseil d'Administration de l'Institut Colonial de Marseille, concerning the question how Marseilles could be made a first-class crude rubber port after the war, stated that one of the first steps to be taken is the establishment of a service for the technical examination of crude rubber.

Recent Patents Relating to Rubber.

THE UNITED STATES.

ISSUED JUNE 3, 1919.

- N. O. 1,305,260. Valve for pneumatic tires, tanks, etc., utilizing air under pressure. L. T. Earnhart, assignor to Safety First Devices Co.—both of Indianapolis, Ind.
- 1,305,261. Valve for pneumatic tires, tanks, etc., utilizing air under pressure. C. B. Earnhart, assignor to Safety First Devices Co.—both of Indianapolis, Ind.
- 1,305,262. Valve for pneumatic tires, tanks, etc., utilizing air under pressure. C. B. Earnhart, assignor to Safety First Devices Co.—both of Indianapolis, Ind.
- 1,305,263. Valve for pneumatic tires, tanks, etc., utilizing air under pressure. C. B. Earnhart, assignor to Safety First Devices Co.—both of Indianapolis, Ind.
- 1,305,264. Valve for pneumatic tires, tanks, etc., utilizing air under pressure. C. B. Earnhart, assignor to Safety First Devices Co.—both of Indianapolis, Ind.
- 1,305,265. Valve for pneumatic tires, tanks, etc., utilizing air under pressure. C. B. Earnhart, assignor to Safety First Devices Co.—both of Indianapolis, Ind.
- 1,305,266. Valve for pneumatic tires, tanks, etc., utilizing air under pressure. C. B. Earnhart, assignor to Safety First Devices Co.—both of Indianapolis, Ind.
- 1,305,522. Reinforced pneumatic inner tube for tires. C. R. Rawdon and J. H. Heilmann, St. Louis, Mo.
- 1,305,682. Demountable rim for tires. R. W. Ashley, New York City, assignor of $\frac{1}{2}$ to F. Oberkirch, St. Marys, Pa.
- 1,305,683. Demountable rims for tires for wheel wells, etc. R. W. Ashley, New York City, and F. Oberkirch, St. Marys, Pa.
- 1,305,709. Fountain marking-brush. C. A. Garvey, Clayton, Mo.
- 1,305,812. Metal and rubber shoe-sole. E. E. Nambert, Attalla, La.
- 1,305,819. Resilient tire for trucks. R. McMillen, Portland, Ore.
- 1,305,820. Vehicle wheel with solid rubber tire. C. Macbeth, Birmingham, assignor to The Dunlop Rubber Co., Limited, Westminster, London—both in England.
- 1,305,867. Crutch tip. M. Atlas, Jacksonville, Fla.

ISSUED JUNE 10, 1919.

- 1,306,011. Automatic life-saving device. J. Horak, Chicago, Ill.
- 1,306,055. Automobile tire. W. C. Fleisher, Hackensack, Minn.
- 1,306,130. Inner tube. L. D. Tibbets, Clayton, Wash.
- 1,306,184. Syringe. H. S. Jones, Kansas City, Mo.
- 1,306,243. Woven cartridge-belt with elastic warp in front. W. Achtmeyer, Middletown, Conn.
- 1,306,245. Piece of elastic for tire valves. J. A. Borden, Los Angeles, Calif., assignor to A. Schrader's Son, Inc., New York City.
- 1,306,303. Mouth-piece for feeding-bottles. F. R. Graham-Yoell, Leith, Scotland.
- 1,306,343. Reinforced tire casing. A. H. Gruber, Evanston, Ill.
- 1,306,348. Separable gas-bag for airplane. J. N. Lewis, Detroit, Mich.
- 1,306,594. Fountain pen. A. L. Sowers, Northampton, Mass.
- 1,306,654. Resilient vehicle wheel. J. G. Worsley, Chicago, Ill.
- 1,306,695. Valve-cap for automobile tires. T. D. Mulyear, Springfield, Mass.
- 1,306,515. Divisible rim for tires. J. C. Barker, London, Eng.
- 1,306,587. Pneumatic tire. J. H. Ferguson, assignor to Ferguson Tire Corp., both of Illinois, N. Y.

ISSUED JUNE 17, 1919.

- 1,306,724. Pneumatic tires with interliner. A. T. Schlander, assignor of $\frac{1}{2}$ to C. E. Adamson—both of Toledo, O.
- 1,306,742. Resilient automobile fender with elastic covering. E. B. Bowling, Chicago, Ill.
- 1,306,787. Pneumatic mattress. M. G. Stevenson, Orange Lake, Fla.
- 1,306,800. Hose supporter. F. H. Childs, Stroud, Okla.
- 1,306,814. Resilient tire for tires. J. R. Holcombe, New York City.
- 1,306,816. Dental syringe for cement. W. R. Howard, Newport, R. I. (Continuation of earlier applications.)
- 1,306,828. Demountable rim for tires. S. R. McKay, assignor to The McKay Co.—both of Cleveland, Ohio.
- 1,306,927. Demountable rim for tires. J. N. Foster, assignor of $\frac{1}{2}$ to H. Becker and $\frac{1}{2}$ to O. Nordwall—all of El Paso, Tex.
- 1,306,996. Shoe with vulcanizable middle and outer soles. P. H. Brown, assignor to Apsley Rubber Co.—both of Hudson, Mass.
- 1,307,010. Elastic garment-fastener. C. W. Kinsman, New York City.
- 1,307,030. Pneumatic tire. H. Bretschler, assignor of $\frac{1}{2}$ to F. Spitzner—both of New York City, U. S. A.
- 1,307,123. Resilient tire. S. D. Hartog, St. Louis, Mo.
- 1,307,129. Hose clasp. E. Karadaghi, Chatham, N. J.
- 1,307,160. Resilient tire and adjustable rim. F. B. Turner, assignor of $\frac{1}{2}$ to L. W. Duval—both of Ocala, Fla.
- 1,307,190. Tire-repair device. F. B. Dunlap, assignor of $\frac{1}{2}$ to E. C. Stricker—both of Tulsa, Okla., U. S. A.
- 1,307,197. Pneumatic fountain pen. J. F. Gardnet, Kansas City, Mo.
- 1,307,208. Tire with studs projecting through eyelets in tread when in mud, on soft ground, retracting when on hard surface. W. E. Muntz, London, Eng.
- 1,307,212. Resilient wheel. M. Philipp, assignor to National Auto Wheels Co.—both of Washington, D. C., U. S. A.
- 1,307,245. Valveless syringe. F. S. Dickinson, Rutherford, N. J.
- 1,307,267. Demountable rim for tires. L. H. Perlman, New York City.

ISSUED JUNE 24, 1919.

- 1,307,386. Film-holder for X-ray apparatus. H. F. Waite, Whitestone Landing, N. Y.
- 1,307,423. Detachable rubber heel with reinforcing plate embedded in body portion. C. Smith, S. D. McKosker, and J. R. Simpson—all of Endicott, N. Y.
- 1,307,461. Demountable tire-rim with locking device. T. A. Smith, San José, Calif. (Continuation in part of previous application.)
- 1,307,473. Demountable split tire-rim. C. K. Baker, assignor to Universal Rim Co.—both of Chicago, Ill.

- 1,307,630. Fountain pen. W. A. Haskins, West Somerville, Mass.
- 1,307,730. Resilient tire. M. Freedman, Brookline, Mass.
- 1,307,731. Automobile tire with rubber-belt of rubberized wool fabric. C. C. Gates, assignor by mesne assignments to The Gates Rubber Co.—both of Denver, Colo.
- 1,307,737. Metal-protected rubber heel. W. R. Hildebrand, Chicago, Ill.
- 1,307,769. Inner tube. F. E. Bessler, Akron, O.
- 1,307,770. Inner tube. F. E. Bessler, Akron, O.
- 1,307,782. Fountain pen with electric light. A. Lawres, Brooklyn, N. Y.
- 1,307,809. Cushion wheel. A. S. Duffles, Markesan, Wis., and F. Mead, Chicago, Ill.
- 1,307,825. Pneumatic surf mattress. H. B. Marshall, Long Beach, Calif.
- 1,307,872. Cushion tire. W. R. Miller, Elizabeth, N. J.
- 1,307,921. Driving armor with waterproof outer suit. E. E. Nichoff, Brooklyn, N. Y. (Renewed March 21, 1919.)
- 1,307,922. Cue tip. A. O. Olafson, assignor of $\frac{1}{2}$ to G. A. Brockway—both of Scobey, Mont.
- 1,307,942. Foldable bath-tub. E. Volters, St. Louis, Mo.
- 1,307,947. Rubber dust-cap for valve. E. O. Williams, Vicksburg, Mich.
- 1,307,980. Tire valve. H. P. Kraft, Ridgewood, N. J.
- 1,307,985. Rubber heel. J. S. Feden, New York City.
- 1,307,990. Cushion heel. E. D. Stallord, Baltimore, Md.

ISSUED JULY 1, 1919.

- 1,308,025. Elastic attachment for corsets. A. M. Anchorstar, New York City.
- 1,308,037. Tire valve and pressure gauge. J. Buchek, Gal. Park, Ill.
- 1,308,033. Milling-machine tool-on. R. H. Dechow, St. Paul, Minn.
- 1,308,042. Tiding machine (at-rop. W. H. and M. Koch, Independence, Ia.
- 1,308,097. Collapsible water-bucket. H. Moore, New York City.
- 1,308,268. Collapsible water-bucket, with handle. C. Wagner, Grantwood, N. J.; A. Hoemel, New York City, and C. J. Vieau, Brooklyn, N. Y.
- 1,308,375. Parachute with inflatable expander. K. S. Sate, Hecla, S. D.
- 1,308,416. Cushion tire. C. H. Gunn, Emeryville, Calif.
- 1,308,427. Combined hot-water and de-ice bag, with transverse web portion. A. Laborde, New York City.
- 1,308,561. Life-preserving suit. B. C. Teeters, Belleluc, Minn.
- 1,308,616. Demountable rim for tires. E. J. Bergman, Vincennes, Ind.

THE DOMINION OF CANADA.

ISSUED JUNE 17, 1919.

- 1,308,556. Rubber pad for automobile pedals. G. H. Rivers, New York City, U. S. A.

ISSUED JULY 24, 1919.

- 1,309,081. Typewriter eraser and means of attaching to typewriter. F. A. Johnson, University Place, Neb., U. S. A.

ISSUED JULY 1, 1919.

- 1,309,322. Section cap. C. M. Wokott, New York City, and S. and I. Myerling, assignors of $\frac{1}{2}$ of the interest, both in Baltimore, Md.—all in U. S. A.

ISSUED JULY 8, 1919.

- 1,309,453. Blow-out patch. W. C. Wood, Minneapolis, Minn., U. S. A.
- 1,309,475. Demountable rim for tires. W. M. Butler, Calistoga, Calif., U. S. A.
- 1,309,478. Nut for bolts on tire-valves. A. Schrader's Son, Inc., New York City, assignor of H. P. Kraft, Ridgewood, N. J.—both in U. S. A.
- 1,309,491. Hoof-pad for horses, with lower tread portion of rubber. F. R. Yutton and G. W. Dunn, assignors of $\frac{1}{2}$ interest—both of Scranton, Pa., U. S. A.
- 1,309,495. Demountable rim for tires. I. D. Walter, assignor; J. Brinkerhoff, assignee of $\frac{1}{2}$ to S. B. F. Cole, 1/10; T. Flournoy and J. G. Grant, 1/20 each; J. W. Grant and S. A. Latimer, 1/50 each—all of Harrisburg, Ark.; and F. and H. C. Shaver, 1/20 each, both of Nettleton, Ark.—all in U. S. A.

THE UNITED KINGDOM.

ISSUED JUNE 4, 1919.

- 124,699. Infant's outdoor garment, with removable waterproof pad. A. E. White, 88 Chancery Lane, London, Eng. (Venus Manufacturing Co., Boston Block, Minneapolis, Minn., U. S. A.)
- 124,746. Gutta percha-insulated joint making packing. Société Anonyme Ateliers Otis-Pifre, 101 rue du Courcelles, Paris. (Not yet accepted.)
- 124,863. Security bolts for tires, with heads of rubber compound, fabric and rubber, etc. G. W. Beldam, Bostons Lodge, Windmill Road, Ealing, and A. E. Kyal, Glamorgan House, Brentford—both in Middlesex.

ISSUED JUNE 12, 1919.

- 124,967. Rubber-lined hose coupling. F. Reddaway & Co., and J. Musket, Cheltenham street, Pendleton, Manchester.
- 125,078. Demountable rim for tires. C. F. Rubsam, 233 Broadway, New York City, U. S. A.
- 125,079. Pressure gauge for tires. M. C. Schweinert, 226 Palisade avenue, West Hoboken, N. J., U. S. A. (Not yet accepted.)
- 125,080. Tire valve. H. P. Kraft, 219 Godwin avenue, Ridgewood, N. J., U. S. A. (Not yet accepted.)

ISSUED JUNE 18, 1919.

- 125,193. Rubber button. A. Rner, Parliament Mansions, Victoria street, London.
- 125,217. Joint-making packing. I. T. Croll, 25 Royal Exchange Square, Glasgow.

- 125,376. Detachable rubber head. P. Mengarini, 13 via Cola di Rienzo, Roma, Italy.
 125,384. Net for use with trevales. H. P. Kraft, Godwin avenue, Richmond, N. I. U. S. A. (Not yet accepted.)

ISSUED JUNE 25, 1919.

- 125,506. Improvements in artificial limbs. T. B. Thompson and W. D. McKinnon, 30 Willcott Road, Acton, Middlesex.
 125,521. Dressing machine employing elastic cord. R. A. Elton, Claremont, Clarendon Road, Putney, London.
 125,552. Externally applied studs for boots, with rubber protector. H. T. Shells, Tahoonia, Ferrisville, Harrisburg, Pa.
 125,582. Golf practicing appliance. C. F. Smith, 2 Lafayette street, White Plains, N. Y. U. S. A. (Not yet accepted.)
 125,638. Elastic diaphragms for pressure-operated mechanism in recording instruments, etc. Aeronautical Instrument Co. and G. Brewer, 33 Chancery Lane, London.
 125,704. Dismountable rim for tires. J. Martin, 1036 Argyle street, Glasgow.
 125,731. Manometer with rubber sleeve, etc. M. Walker, School of Technology, Sackville street, Manchester, and A. E. L. Scando, Strathfield, Harborough Road, Ashton-on-Mersey, Cheshire.
 125,759. Improvements in neck of hot-water bottles, etc. A. D. Ingram, London, Eolia Rubber Works, Felsdale street, Hackney Wick, London.
 125,757. Improvement in neck of hot-water bottles, etc. Same inventor as No. 125,756.
 125,758. Improvement in socket for stopper of hot-water bottles, etc. Same inventor as Nos. 125,756 and 125,757.

NEW ZEALAND.

ISSUED MAY 29, 1919.

- 40,079. Milking-machine test-cup. S. B. Sirfield, Pirongia, Waikato, N. Z.
 41,362. Temporary bottle-stopper of vulcanized rubber. A. H. Thompson, 76 Pitt street, Sydney, N. S. W., assignee of G. C. Maas, Zenoni, Milroy avenue, and W. Young, "Wilma," Lenthall street—both of Kensington.

THE FRENCH REPUBLIC.

PATENTS ISSUED, WITH DATES OF APPLICATION.

- 489,964. (May 6, 1918.) Improvements in tractor wheels, etc. H. Austin.
 489,990. (June 10, 1918.) Resilient wheel. R. Fukuda.
 490,172. (March 26, 1917.) Extensible rubber boot. H. Mathouillot.
 490,194. (May 22, 1918.) Resilient wheel for vehicles. T. Smolka.
 490,207. (May 22, 1918.) Improvements in split or demountable rims for wheels. T. C. North.
 490,265. (May 25, 1918.) Improvements in tubes for pneumatic tires. C. R. Rawdon, J. H. Heitmann, and C. D. Hall.
 507,238-487. (March 8, 1918.) First certificate of addition to the patent taken out November 27, 1917, for improvements in abdominal belts and similar articles. F. G. Baugatz.
 490,313. (July 7, 1914.) Puncture-proof pneumatic tire. A. Allard.
 490,357. (June 6, 1918.) Interchangeable rubber washer for shoe soles. P. H. M. Gavalda, 3 rue de Courcelles, Paris, France.
 490,405. (June 7, 1918.) Valve for pneumatic tires. Société Michelin & Co.
 490,418. (June 8, 1918.) Improvements in automobile tires. W. I. Varier.
 490,438. (June 11, 1918.) Improvements in the joints of artificial limbs. D. W. Dorrance.
 490,485. (June 13, 1918.) Improvements in artificial limbs. F. H. Critchley.
 490,493. (June 14, 1918.) Device for forming air chambers in tires. P. Mandelli.

TRADE MARKS.

THE UNITED STATES.

- N O. 102,319. Representation of a seal on a ribbon, bearing the monogram MCS—pneumatic tire and tube patches. Motor Car Supply Co., Chicago, Ill.
 108,736. The word ALL-FAK—fruit-jar rubbers. Acme Rubber Manufacturing Co., Trenton, N. J.
 109,695. Representation of a colossal inflated red rubber life-belt inclosing the word JIFFY, above the words "THE CARTRIDGE DOES IT," and a girl in a bathing suit and a sailor leaning against opposite sides of the belt—life-belts of rubber, with a sealed compressed-air tube for charging. Jiffy Life Belt Manufacturing Corp., New York City.
 111,974. The word BOOSTER—shoes, now made of leather. United States Rubber Co., New Brunswick, N. J., and New York City.
 111,975. The word BOOSTER—shoes, now made of leather. United States Rubber Co., New Brunswick, N. J., and New York City.
 111,979. The words SPOT LIGHT—shoes, now made of leather. United States Rubber Co., New Brunswick, N. J., and New York City.
 111,980. The word VICTORIA shoes, now made of leather. United States Rubber Co., New Brunswick, N. J., and New York City.
 111,982. The word ELISE—shoes, now made of leather and a combination of leather and cloth. The United States Rubber Co., New Brunswick, N. J., and New York City.
 112,034. The word WORKSTER—workers' clothing of fabric, fabric and rubber, etc. United States Rubber Co., New Brunswick, N. J., and New York City.
 112,460. The word HAVES—men's, women's, and children's shoes, boots, and slippers, made of leather, suitable fabrics, rubber, or a combination of two or more of these materials. E. Hayes, Inc., New York City.
 112,605. Representation of a school-house in silhouette, resting on a rectangle, the two superimposed on a circle—rubber erasers, etc.
 113,735. The word DO-RO—belting, hose, and machinery packing. The Diermann-Rocher Co., Cincinnati, O.

- 114,516. Representation of a stencil inclosing the words AMERICAN ZINC L. & S. Co., AZO, LLL—zinc oxides for use as paint pigments. American Zinc, Lead & Smelting Co., Boston, Mass., and St. Louis, Mo.
 114,517. Representation of a stencil inclosing the words AMERICAN ZINC L. & S. Co., AZO, LLL—zinc oxides for use as paint pigments. American Zinc, Lead & Smelting Co., Boston, Mass., and St. Louis, Mo.
 114,520. Representation of a stencil inclosing the words AMERICAN ZINC L. & S. Co., AZO, ZZZ—zinc oxides for use as paint pigments. American Zinc, Lead & Smelting Co., Boston, Mass., and St. Louis, Mo.
 114,531. The word RUSSELL within an oval—woven cartridge and other woven military belts. The Russell Manufacturing Co., Middletown, Conn.
 116,062. The words HENSHIRE GOOD LUCK HELL above representation of a horseshoe and the words RACINE AUTO TIRE Co.—molded rubber and composition cushion heels and heel lifts. Racine Auto Tire Co., Racine, Wis.
 116,384. Representation of a denture bearing the words NATURAL GUMS—Dr. T. J. King—Clarence W. King, D. D. S., Inc., Boston, Mass.
 116,840. The words LAS-STIK in fancy letters—fabric and rubber repair patches. Las-Stik Patch Manufacturing Co., Hamilton, O.
 116,920. The word TEXHED—waterproof textile fabrics. Eastern Finishing Works, Inc., Kenyon, R. I.
 117,175. The words TIP TOE—nursing nipples, etc. Whittall Tatum Co., New York City.
 117,113. The word PARAOOT—waterproof textile fabrics. Eastern Finishing Works, Inc., Kenyon, R. I.
 117,223. The word XLO—rubber tires and tubes. Excellito Tire & Rubber Co., Philadelphia, Pa.
 117,508. The word BRANES—snake lining. "Scandinavia" Belting, Limited, London, Eng.
 117,729. Representation of the ship Mayflower—inner tubes and tires. Mayflower Rubber Works Co., Braintree, Mass.
 117,731. Representation of the ship Mayflower—hot-water bottles, syringes, etc. Mayflower Rubber Works Co., Braintree, Mass.
 117,732. The word MAYFLOWER—inner tubes and tires. Mayflower Rubber Works Co., Braintree, Mass.
 117,734. The word MAYFLOWER—hot-water bottles, syringes, etc. Mayflower Rubber Works Co., Braintree, Mass.
 117,873. The word EACO—rubber and composition soles and heels. Essex Rubber Co., Trenton, N. J.
 117,988. The word RETARDAR quoted—waterproofing preparation for wearing apparel and textile fabrics. Pearsall Products Corp., New York City.
 118,485. The word DOLPHIN—rubber garden hose. Simmons Hardware Co., St. Louis, Mo.

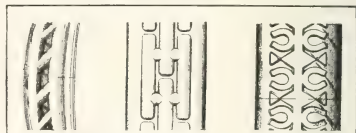
THE DOMINION OF CANADA.

- 24,393. The word SILKELASTIC—suspenders and garters. The Dominion Suspender Co., Limited, Niagara Falls, Ont.
 24,430. The words SHUR-ON—belting, hose, and packing; rubber and fabric interliners; friction cloth; tire putty; rubber paints; rubber and canvas footwear; weather stripping, rubberized sheeting; and rubber rolls. Dunlop Tire & Rubber Goods Co., Limited, Toronto, Ont.
 24,448. The word SECURITY in representation of a tire—automobile tires and accessories. H. C. Hatch, Montreal, Que.
 24,469. The words TIGER BRAND and the representation of a tiger's head in a circle—rubber coatings, etc. Thos. Birckett & Son Co., Limited, Ottawa, Ont.
 24,471. The word TRANSPORT—rubber tires and tubes. The Canadian Fairbairn-Morse Rubber Co., Limited, Toronto, Ont.
 24,477. The word HUSK—chewing gum, etc. Frederick Webb Brooke, Toronto, Ont.

DESIGNS.

THE UNITED STATES.

- N O. 53,410. Tire. Patented June 10, 1919. Term 14 years. L. R. Davis, assignor to Revere Rubber Co.—both of Providence, R. I.
 53,426. Automobile wheel. Patented June 10, 1919. Term 14 years. W. J. P. Moore, New York City.



- 53,410. 53,427. 53,479.
 53,427. Pneumatic tire. Patented June 12, 1919. Term 14 years. I. R. Renner, Akron, O., assignor to The B. F. Goodrich Co., New York City.
 53,479. Tire or tire casing. Patented June 17, 1919. Term 3½ years. C. Wright, assignor to Racine Auto Tire Co.—both of Racine, Wis.

THE DOMINION OF CANADA.

- 4,591. Resilient semi-pneumatic wheel. Patented May 10, 1919. Joseph Monkhouse, Guelph, Ont.
 4,602. Garter. Patented May 17, 1919. Kitchener Suspender Co., Limited, Kitchener, Ont.

THE FRENCH REPUBLIC.

- 5,751. Rubber heel. Patented January 16, 1919. H. Victor, 37 boulevard du Temple, Paris.
 5,791. Vulcanized and calendered belting bearing the words ROMANS M. C. B. Patented January 16, 1919. Manufacture de Caoutchouc de la Drôme, Romans, Drôme.

The Review of the Crude Rubber Market.

JULY WAS A QUIET MONTH in the crude rubber market, due to the apathy of both buyers and sellers to agree on prices. As visible supplies were ample and arrivals for the month promised to be unusually heavy the manufacturers were not interested, moreover, holders anticipated heavy buying on the resumption of trade with Germany. The failure of this movement together with the break in sterling exchange and a lack of demand depressed the market and prices weakened. Sellers, however, refused to make concessions in accord with the buyers' views and the market became dormant.

The following quotations indicate the price movement of plantation and South American Para rubber.

PLANTATION HEVEA: July 1, first latex crepe, spot 42½ cents; July-September, 43; October-December, 44½, and January-June, 1920, arrivals, 46 cents. July 24, first latex crepe, spot 40½ cents; August-September, 40¾; October-December, 43; January-June, 1920, arrivals, 45 cents.

July 1, ribbed smoked sheets, spot 41½ cents; July-September, 42½; October-December, 43½, and January-June, 1920, arrivals, 45 cents. July 24, ribbed smoked sheets, spot 39½ cents; August-September, 39¾; October-December, 42, and January-June, 1920, arrivals, 44 cents.

July 1, No. 1 amber crepe, spot 39 cents; August-December, 39½, and January-June, 1920, arrivals, 41½ cents. July 24, No. 1 amber crepe, spot 37 cents; August-December, 37, and January-June, 1920, arrivals, 39 cents.

July 1, No. 1 roll brown crepe, spot 30 cents; July-December, 31; and January-June, 1920, arrivals, 31½ cents. July 24, No. 1 roll brown crepe, spot 29½ cents; August-December, 29; and January-June, 1920, arrivals, 30 cents.

SOUTH AMERICAN PARAS AND CAUCHO. July 1, spot prices were: upriver fine, 55; islands fine, 47½; upriver coarse, 32; islands coarse, 21, and Cameté coarse, 22 cents. July 24, spot prices on these sorts were: upriver fine, 54½; islands fine, 48; upriver coarse, 32; islands coarse, 21, and Cameté coarse, 22 cents.

NEW YORK QUOTATIONS.

Following are the New York spot quotations, for one year ago, one month ago and on July 28, the current date:

	August 1, 1918, Free Rubber.	July 1, 1919.	July 28, 1919.
PLANTATION HEVEA—			
First latex crepe.....	63 @	40 @	41 @ 41½
Amber crepe No. 1.....	61 @	38 @	38 @
Amber crepe No. 2.....	61 @	37 @	37 @
Amber crepe No. 3.....	58 @	36 @	36 @
Amber crepe No. 4.....	57 @	35 @	35 @
Brown crepe, thick clean.....	60 @	36 @	35 @
Brown crepe, thin clean.....	60 @	36 @	35 @
Brown crepe, thin sticky.....	50 @	34 @	35 @
Brown crepe, rolled.....	44 @	29½ @	29 @ 29½
Smoked sheet, ribbed, standard quality.....	62 @	39 @	40 @
Smoked sheets, plain, standard quality.....	61 @	37 @	39 @
Unsmoked sheet, standard quality.....	60 @	36 @	38 @
Colombo scrap.....	46 @	30 @	32 @
Colombo scrap No. 1.....	44 @	28 @ 29	30 @
EAST INDIAN—			
Assam crepe.....	60 @	*56 @	*58 @
Assam onions.....	54 @		
Pennac block scraps.....	@	*38 @	*40 @
PONTIANAK—			
Banjermassin.....	15 @	14 @	13½ @
Palembang.....	@		14½ @
Pressed block.....	25 @	25 @	21½ @
Sarawak.....	@		11 @
SOUTH AMERICAN—			
PARAS—			
Upriver fine.....	68 @	55½ @ 56	54½ @ 55
Upriver medium.....	63 @	51 @	*53 @
Upriver coarse.....	40 @	34 @	32 @

	August 1, 1918, Free Rubber.	July 1, 1919.	July 28, 1919.
SOUTH AMERICAN—			
PARAS—			
Upriver weak, fine.....	56 @	46 @	39 @
Islands, fine.....	59 @	48 @	*48 @
Islands, medium.....		43 @	*44 @
Islands, coarse.....	27 @	21 @	*21 @
Madeira, fine.....		57 @	55½ @
Acre Bolivian, fine.....		56½ @	55 @
Canica, coarse.....		23½ @	*23 @
Peruvian fine.....		54 @	53 @
Tapajos fine.....		53 @	53½ @
CAUCHO—			
Lower caucho ball.....	36 @	30½ @	29 @
Upriver caucho ball.....	40 @	48 @	48 @
MANICOBAS—			
Cara negro heads.....	38 @	*25 @	*34 @
Cara scrap.....	29 @	*30 @	*39 @
Manicoba (basis 30% loss washing and drying).....	42 @	34 @	*32 @
Mangabeira thin sheet.....	40 @	38 @	*38 @
CENTRALS—			
Corinto scrap.....	38 @ 39	35 @ 37	31 @
Emeralda sausage.....	39 @	35 @	31 @
Central scrap.....	29 @	34 @	31 @
Central scrap and strip.....		32 @	29 @
Central wet sheet, 25%.....		28 @	20 @ 21
Guayule, 20% guarantee.....	35 @	25 @	25 @
Guayule, dry.....	48 @	36 @	35 @
AFRICANS—			
Niger flake, prime.....	28 @	@	@
Beniguala, extra No. 1, 28%.....	33 @	*24 @	24 @
Beniguala No. 2, 32½%.....	29 @	*26 @	25 @
Congo prime, black upper.....	30 @	38 @ 39	35 @
Congo prime, red upper.....	48 @	*34 @	35 @
Rio Nunez ball.....	55 @		35 @
Rio Nunez sheets and strings.....	@	@	@
Congo's nusers.....	@	@	@
Massi sheets and strings.....	55 @	@	@
GUTTA PERCHA—			
Gutta Siak.....	23 @	25 @	22 @
Red Macassar.....	2 00 @	3.15 @	2.60 @
BALATA—			
Block, Ciudad Bolivar.....	71 @	75 @	78 @ 62
Colombia.....	61 @		61 @ 62
Panama.....	51 @	50 @ 60	48 @ 49
Surinam sheet.....	95 @	1 05 @ 1 10	93 @ 94
Surinam sheet.....	97 @		94 @ 95

* Nominal.

RECLAIMED RUBBER.

The market has continued dull and featureless, which is expected at this time of the year when buying is usually confined to routine orders and occasional replacement lots. The preparations being made by footwear, insulated wire and mechanical goods factories for a good autumn business are favorable signs for reclaims. Prices have not changed.

NEW YORK QUOTATIONS.

July 26, 1919.

Subject to change without notice.

Standard reclaims.....	lb.	30 @ 35
Floating.....	lb.	30 @ 35
Friction.....	lb.	11 @ 12
Mechanical.....	lb.	30 @ 25
Red.....	lb.	14½ @ 15½
Shoe.....	lb.	16 @ 16½
Tire, auto.....	lb.	12 @ 13
Truck.....	lb.	14 @ 15
White.....	lb.	14 @ 15

UNDER DATE OF JUNE 24, ADVICES FROM AMSTERDAM, HOLLAND, report the resumption of the crude rubber market at that port. Direct imports from the Dutch East Indies are being received and find a ready sale, latex being quoted Fl. 1.20 and ribs, Fl. 1.15 per one-half kilo.

COMPARATIVE HIGH AND LOW SPOT RUBBER PRICES.

	July.		1918.		1917.	
PLANTATIONS—	1919.	1918.	1918.	1917.	1917.	1917.
First latex sheet	\$0.42	\$0.50	\$0.63	\$0.61	\$0.67	\$0.60
Second sheet ribbed	.. 41	.. 48	.. 62	.. 60	.. 67	.. 60
PARAS—						
Upper latex sheet	.. 55	.. 57	.. 68	.. 68	.. 69	.. 68
Upper latex sheet	.. 53	.. 57	.. 60	.. 60	.. 69	.. 68
Island latex sheet	.. 47	.. 47	.. 57	.. 57	.. 69	.. 61
Island latex sheet	.. 41	.. 47	.. 57	.. 57	.. 69	.. 61
Cameta	.. 41	.. 47	.. 57	.. 57	.. 69	.. 61

*Figured only to July 25.

THE MARKET FOR COMMERCIAL PAPER.

In regard to the financial situation, Albert B. Bera, broker in crude rubber and commercial paper, No. 68 William street, New York City, advises as follows:

"During July the demand for paper has been light and mostly from out-of-town buyers, the best rubber houses cutting at 3 1/2 per cent below par and others that not so well known at 6 per cent."

WEEKLY RUBBER REPORT.

GUTHRIE & CO., LIMITED, Singapore, report (July 1, 1919).

At the weekly rubber auction which commenced yesterday there was a strong demand for standard grades at prices which, on the average, show a further slight decline. The top price for ribbed smoked sheet was 74 1/2 cents, paid for five lots only, but the bulk of this grade sold at 73 1/4 cents. Fine pale crepe sold up to 76 1/2 cents, a drop of 1 cent on the week. Of quality lots of sheet and crepe were readily taken up at last week's prices. Fine brown crepes were steady, while brown and dark crepes declined 1/2 cent. The quantity sold was 547 tons out of 853 tons catalogued.

The following is the course of values:

	In Singapore	Per Pound in London.	Shipping Equivalent per Pound in London.
Sheet, fine ribbed smoked	75 1/2	74 1/2	1/10 1/2
Sheet, good ribbed smoked	66	71 1/2	1/8
Sheet, plain smoked	66	70 1/2	1/7 1/2
Crepe, fine pale	75	76 1/2	2/0
Crepe, good pale	67	74	1/9 1/2
Crepe, fine brown	83	84	1/8 1/2
Crepe, good brown	83	88	1/5 1/2
Crepe, dark	82	82 1/2	1/5 1/2
Crepe, bark	57 1/2	43	1/18 1/2

*Quoted in S. S. Currency.

FEDERATED MALAY STATES RUBBER EXPORTS.

It is stated by an official cablegram from Kuala Lumpur that 7,308 tons of plantation rubber were exported from the Federated Malay States in the month of May, as against 7,644 tons in April and 5,851 tons in the corresponding month last year. The total export for five months of the present year was 43,623 tons, compared with 35,396 tons in 1918 and 35,467 tons in 1917. Comparative statistics are appended:

	1917.	1918.	1919.
January	5,995	7,388	7,163
February	7,250	6,820	10,809
March	7,088	7,709	10,679
April	5,955	7,428	7,664
May	7,179	5,851	7,308
Totals	33,467	35,396	43,623

STRAITS SETTLEMENTS RUBBER EXPORTS.

An official cablegram from Singapore states that 15,845 tons of rubber were exported from Straits Settlements ports in the month of May, compared with 10,848 tons in April and 13,587 tons in the corresponding month last year. The total export for five months of the present year was 77,666 tons, compared with 35,665 tons in 1918 and 30,741 tons in 1917. Appended are the comparative statistics:

	1917.	1918.	1919.
January	3,562	4,302	14,404
February	6,495	2,334	15,661
March	8,299	8,858	20,908
April	6,103	6,584	10,848
May	6,282	13,587	15,845
Totals	30,741	35,665	77,666

Transshipments for month of May (1919), 2,132 tons.

RUBBER IMPORTS AND EXPORTS FOR CEYLON.

IMPORTS.		January 1 to June 2.	
		1918.	1919.
Crude rubber:			
From Straits Settlements	.....pounds	1,471,419	1,087,026
India	.....	1,189,044	612,757
Burma and other countries	.....	3,407	.....
Totals	.....	2,662,572	1,699,783
EXPORTS.		January 1 to June 2.	
		1918.	1919.
Crude rubber:			
To United Kingdom	.....pounds	6,325,796	15,227,401
Belgium	.....	.....	29,120
France	.....	22,430	330,010
Victoria	.....	91,975	89,785
New South Wales	.....	156,267	91,700
United States	.....	9,806,909	33,634,370
Canada and Newfoundland	.....	2,565,606	260,016
India	.....	1,079	1,977
Straits Settlements	.....	136,818	191,741
Japan	.....	.....	.....
Totals	.....	19,167,180	49,786,544

*These figures include cargoes for transshipment to New Zealand, other parts of Australia, and dependencies.

(Compiled by the Ceylon Rubber Company.)

PLANTATION RUBBER EXPORTS FROM JAWA.

	March.		Three Months Ended March 31.	
	1918.	1919.	1918.	1919.
To Holland	.....kilos	.....	.....	120,000
England	.....	173,900	1,659,000	1,019,000
France	.....	167,000	.....	167,000
United States	292,000	1,864,000	2,060,000	5,035,000
Canada	.....	.....	.....	20,000
Singapore	58,000	459,000	377,000	1,391,000
Japan	.....	59,000	238,000	1,250,000
Australia	.....	51,000	.....	117,000
Other countries	.....	.....	.....	11,000
Totals	358,000	2,773,000	4,334,000	8,005,000
Ports of origin:				
Batavia	330,000	1,081,000	2,348,000	4,033,000
Samarang	5,000	133,000	53,000	156,000
Soerabaya	25,000	1,432,000	1,933,000	4,463,000
Other ports	.....	127,000	.....	353,000
Totals	358,000	2,773,000	4,334,000	8,005,000

PLANTATION RUBBER EXPORTS FROM MALAYA.

(These figures include the production of the Federated Malay States, but not of Ceylon.)

	January 1 to March 31.		Jan. 1 to Feb. 28, 1919.		Totals.	
	Singapore.	Port. Sweetenham. Malacca.	Penang.			
To United Kingdom	12,561,200	.....	.....	3,512,400	16,073,600	
The Continent	6,507,200	.....	.....	.....	6,507,200	
Japan	8,122,800	.....	.....	211,200	8,334,000	
Ceylon	50,000	.....	.....	.....	50,000	
United States and Canada	90,328,400	.....	.....	2,052,400	92,380,800	
Australia	88,000	.....	.....	.....	88,000	
China (Hongkong)	.....	.....	.....	.....	.....
Other countries	64,800	.....	.....	.....	64,800	
Totals	117,925,400	.....	.....	5,776,600	123,698,400	

For the year 1918	225,100,000	837,600	12,479,200	238,416,800
For the year 1917	.....	.....	.....	.....
For the year 1916	.....	.....	.....	.....
For the year 1915	.....	.....	.....	.....
For the year 1914	.....	.....	.....	.....

(Compiled by Burroughs & Co., Singapore.)

EXPORTS OF INDIA RUBBER FROM MANAOS DURING THE MONTH OF MAY, 1919.

	NEW YORK.				EUROPE.					
EXPORTERS.	Fine.	Medium.	Coarse.	Caucho.	Fine.	Medium.	Coarse.	Caucho.	TOTALS.	GRAND TOTALS.
Stowell & Co.	.....	.....	.....	133,450	65,055	8,273	15,883	51,470	140,681	274,131
Tancredi Porto & Co.	81,585	14,704	25,995	20,716	143,000	8,330	9,288	15,382	.....	176,000
General Rubber Co. of Brazil	103,382	7,699	17,479	45,435	190,000	.....	.....	.....	.....	124,000
T. G. Araujo	.....	.....	30,960	10,240	41,200	10,147	1,440	11,227	73,266	167,274
T. A. Mendes & Co.	10,546	.....	.....	10,540	20,022	.....	.....	.....	20,022	30,562
Aurum Indus	.....	.....	.....	18,399	.....	.....	.....	.....	.....	18,399
Simfonio & Co.	7,013	1,306	1,628	737	10,686	.....	.....	.....	.....	10,686
Higson & Fall	.....	.....	.....	.....	8,490	1,288	214	.....	9,992	9,992
Totals, Manaos	207,967	23,709	88,755	210,838	531,266	112,044	20,389	73,706	124,730	329,769
In transit, Iquitos	837	17,104	68	5,922	24,131	6,611	2,748	3,754	21,498	34,611
Totals	208,804	40,813	88,823	216,760	555,397	118,655	23,037	76,460	146,228	364,380

(Compiled by Stowell & Co., Manaos, Brazil.)

CRUDE RUBBER ARRIVALS AT ATLANTIC AND PACIFIC PORTS AS STATED BY SHIP'S MANIFESTS.

PARAS AND CAUCHO AT NEW YORK.

	Pounds.	Mixed	Total
June 24. By the S. S. <i>Panama</i> , from Cristobal.	448		66,000
June 30. By the S. S. <i>Alban</i> , from Macao.	47,000		47,000
T. R. Henderson & Co., Inc.	35,200	63,800	119,700
Meyer & Brown, Inc.	276,323	18,519	118,529
Paul & Kelly, Inc.	15,288,000	15,680	51,520
Gaston, Williams & Co.		17,920	476,160
Wimmore			15,449,280
Thieslein & Co.	415		44,750
Various		33,000	1,488,000
June 30. By the S. S. <i>Alban</i> , from Manos.	4,480	2,240	24,640
General Rubber Co., Inc.			4,480
Various			24,160
June 30. By the S. S. <i>Alban</i> , from Para.	63,800	199,700	275,100
Meyer & Brown, Inc.	35,000	20,000	33,000
Paul & Kelly, Inc.	217,600	69,200	130,800
S. Amari & Co., Inc.			338,000
General Export & Commercial Co.	1171		23,000
June 3. By the S. S. <i>Parana</i> , from Manos.	79,054	10,135	46,700
Paul & Kelly, Inc.	21,020	21	31,400
Various			9,210
Paras, Peruvian and Mollendo.			30,000
Cauchos.			40,000
Including medium.			1,000
Camera.			1,000

PLANTATIONS.

(Unloaded 180 pounds net to 240 lbs. or less.)

	Shipment from:	Shipped to:	Pounds.	Totals.
May 27. By the S. S. <i>Ponce de Leon</i> , via Yokohama, at Seattle.	Kobe	London	95,040	95,040
L. Littlejohn & Co., Ltd.				
June 2. By the S. S. <i>Suma</i> , via Yokohama, at Seattle.	Colombo	New York	30,240	
L. Littlejohn & Co., Inc.	Colombo	New York	26,880	
Paul & Kelly, Inc.				57,120
June 2. By the S. S. <i>Billiton</i> , at San Francisco.	Batavia	San Fran.	56,000	
Aldens' Successors, Inc.	Batavia	San Fran.	598,000	
L. Littlejohn & Co., Inc.	Batavia	San Fran.	298,000	
L. Littlejohn & Co., Inc.	Soerabaya	San Fran.	31,900	
General Rubber Co., Inc.	Asahan (Sum.)	New York	10,800	
Mitsui Bussan Kaisha, Inc.	Soerabaya	San Fran.	2,160	
Edward Maurer Co., Inc.	Soerabaya	New York	83,160	
Various	Soerabaya	New York	1,361,020	
June 6. By the S. S. <i>Key West</i> , at Vancouver.	Seattle	Seattle	217,080	
F. R. Henderson & Co., Inc.	Batavia	New York	174,520	
F. R. Henderson & Co., Inc.	Singapore	Akron	177,660	
The B. F. Goodrich Co.	Singapore	New York	94,500	
William H. Stiles & Co.	Singapore	Vancouver	56,000	
Rubber Trading Co., Inc.	Singapore	New York	257,600	
L. Littlejohn & Co., Inc.	Singapore	Seattle	246,400	
The United Malaysian Rubber Co., Inc.	Singapore	Seattle	44,800	
The United Malaysian Rubber Co., Inc.	Singapore	New York	112,240	
F. R. Stern & Co., Inc.	Singapore	New York	56,000	
Paul & Kelly, Inc.	Singapore	Seattle	11,160	
Vernon Metal & Produce Co., Inc.	Singapore	Seattle	1,516,580	
E. Bonstedt & Co., Inc.	Singapore	Seattle	337,680	
June 16. By the S. S. <i>Geyser</i> , via Shanghai, at Tacoma.	Singapore	Akron	51,480	
J. T. Johnstone & Co., Inc.	Singapore	New York	51,480	
J. T. Johnstone & Co., Inc.	Singapore	Tacoma	50,400	
Frank P. Dow & Co., Inc.	Singapore	Tacoma	61,200	
Various			500,760	
June 18. By the S. S. <i>Cyclone</i> , via Yokohama, at Akron.	Hongkong	Akron	371,700	
The B. F. Goodrich Co.	Hongkong	Akron	387,960	
Various			82,440	
June 18. By the S. S. <i>Firestone</i> , at San Francisco.	Columbia	Akron	82,440	
Firestone Tire & Rubber Co., Inc.	Hongkong	Akron	82,440	
June 18. By the S. S. <i>Methven</i> , at Vancouver.	Singapore	Akron	546,480	
The B. F. Goodrich Co.	Singapore	New York	33,600	
Rubber Trading Co., Inc.	Singapore	New York	829,600	
General Rubber Co., Inc.	Singapore	New York	134,424	
F. R. Stern & Co., Inc.	Singapore	Akron	101,340	
The Goodyear Tire & Rubber Co., Inc.	Singapore	New York	56,000	
Meyer & Brown, Inc.	Singapore	New York	56,000	
L. Littlejohn & Co., Inc.	Singapore	Seattle	29,160	
Various			1,786,604	

	Shipment from:	Shipped to:	Pounds.	Totals.
June 24. By the S. S. <i>Port Augusta</i> , at New York.	London	New York	560,000	
L. Littlejohn & Co., Inc.	London	New York	153,900	
Pell & Dumont, Inc.	London	New York	145,500	
R. F. Downing & Co., Inc.	London	New York	174,780	
Various	London	New York	956,180	
June 24. By the S. S. <i>Sorokarka</i> , at San Francisco.	Soerabaya	New York	100,800	
Aldens' Successors, Inc.	Soerabaya	San Fran.	51,300	
J. T. Johnstone & Co., Inc.	Soerabaya	San Fran.	433,680	
The Goodyear Tire & Rubber Co., Inc.	Soerabaya	Akron	27,540	
The Goodyear Tire & Rubber Co., Inc.	Soerabaya	Akron	64,080	
Various	Batavia	San Fran.	19,800	
Various			697,200	
June 27. By the S. S. <i>Yatpofa Marx</i> , at San Francisco.	Singapore	San Fran.	122,400	
Various	Singapore	San Fran.	122,400	
June 27. By the S. S. <i>Louthier Castle</i> , at New York.	Singapore	New York	1,843,520	
The B. F. Goodrich Co.	Singapore	New York	930,240	
F. R. Henderson & Co., Inc.	Singapore	New York	350,640	
William H. Stiles & Co.	Singapore	New York	238,500	
Pacific Trading Corp.	Singapore	New York	62,280	
America	Singapore	New York	43,560	
W. G. Ryckman, Inc.	Singapore	New York	40,320	
Kaw Products Co., Inc.	Singapore	New York	18,000	
Chas. T. Wilson Co., Inc.	Singapore	New York	11,200	
Rubber Trading Co., Inc.	Singapore	New York	1,187,200	
L. Littlejohn & Co., Inc.	Singapore	New York	246,194	
Fred Stern & Co., Inc.	Singapore	New York	300,780	
Hadden & Co., Inc.	Singapore	New York	392,000	
Meyer & Brown, Inc.	Singapore	New York	176,600	
Paul & Kelly, Inc.	Singapore	New York	167,760	
Kawahara Co., Inc.	Singapore	New York	54,720	
Balfour, Williamson & Co.	Singapore	New York	36,000	
Thos. A. Desmond & Co.	Singapore	New York	180,000	
Rubber Co., Inc.	Belawan	New York	70,200	
W. R. Grace & Co., Inc.	Pt. Swet'ham	New York	25,560	
W. R. Grace & Co., Inc.	Penang	New York	174,600	
Various	Singapore	New York	93,440	
Various			6,042,574	
June 28. By the S. S. <i>Defiance</i> , at New York.	London	New York	44,400	
Various	London	New York	14,400	
June 30. By the S. S. <i>Empress of Asia</i> , at Vancouver.	Hongkong	New York	87,360	
William H. Stiles & Co.	Hongkong	Seattle	66,430	
F. R. Henderson & Co., Inc.	Hongkong	New York	44,820	
Thos. A. Desmond & Co.	Hongkong	New York	198,540	
June 30. By the S. S. <i>Orduna</i> , at New York.	Liverpool	New York	1,440	
Various	Liverpool	New York	1,440	
June 30. By the S. S. <i>La Lorraine</i> , at New York.	Haïre	New York	10,620	
Various	Haïre	New York	10,620	
June 30. By the S. S. <i>Elipha</i> , at New York.	Gravenhorst & Co.	Hongkong	9,720	
Various	Gravenhorst & Co.	Hongkong	9,720	
June 30. By the S. S. <i>Orduna</i> , at New York.	Liverpool	New York	1,440	
Various	Liverpool	New York	1,440	
July 1. By the S. S. <i>Monmouth</i> , at New York.	Singapore	New York	920,640	
General Rubber Co., Inc.	Singapore	Jeannette, Pa.	442,180	
Pennsylvania Rubber Co., Inc.	Singapore	New York	441,540	
J. T. Johnstone & Co., Inc.	Singapore	New York	207,180	
Charles T. Wilson Co., Inc.	Singapore	New York	61,380	
Stein, Hall & Co., Inc.	Singapore	New York	50,400	
Obalski & Sweeney, Inc.	Singapore	New York	44,800	
Kaw Products Co., Inc.	Singapore	New York	21,420	
L. Littlejohn & Co., Inc.	Singapore	New York	20,160	
Paul & Kelly, Inc.	Singapore	New York	67,900	
Kawara Company	Singapore	New York	657,464	
Fred Stern & Co., Inc.	Singapore	New York	570,960	
The Goodyear Tire & Rubber Co., Inc.	Singapore	New York	590,645	
A. C. Fox & Co., Inc.	Singapore	New York	505,980	
Federal Products Co., Inc.	Singapore	New York	335,000	
Meyer & Brown, Inc.	Singapore	New York	217,980	
Vernon Metal & Produce Co., Inc.	Singapore	New York	194,220	
Co., Inc.	Singapore	New York	103,140	
Edward Maurer Co., Inc.	Singapore	New York	88,920	
Larger & Co., of London.	Singapore	New York	55,080	
Balfour, Williamson & Co., Inc.	Singapore	New York	53,640	
Peninsular Trading Agency	Singapore	New York	45,180	
Winter, Ross & Co., Inc.	Singapore	New York	45,000	
Mexican Crucible Rubber Co., Inc.	Singapore	New York	36,000	
Pt. Swet'ham	Singapore	New York	15,120	
E. S. Kuh & Volk Co., Inc.	Singapore	New York	34,200	
Various			6,428,329	
July 2. By the S. S. <i>City of Rangoon</i> , at New York.	Colombo	New York	224,000	
United States Rubber Co.	Colombo	New York	10,080	
F. R. Henderson & Co., Inc.	Colombo	New York	128,800	
Charles T. Wilson Co., Inc.	Colombo	New York	92,000	
Thornett & Fairbank	Colombo	New York	25,300	
L. Littlejohn & Co., Inc.	Colombo	New York	11,200	
Various			489,180	

	Shipped from	Shipped to	Pounds	Totals		Shipped from	Shipped to	Pounds	Totals
JULY 6. By the S. S. Karoon, at New York.									
J. L. Johnstone & Co., Inc.	Batavia	New York	391,500		L. Littlejohn & Co., Inc.	Singapore	New York	156,800	
F. R. Henderson & Co., Inc.	Batavia	New York	136,780		General Rubber Co., Inc.	Singapore	New York	54,180	
Manhattan Rubber Mfg. Co.	Batavia	New York	14,230		Edward Maurer Co., Inc.	Singapore	New York	49,500	
Edward Maurer Co., Inc.	Batavia	New York	196,740		Various	Singapore	New York	278,620	1,070,780
Peninsular Trading Agency	Batavia	New York	184,500		JULY 15. By the S. S. Gen. Murray, at New York.				
Fred Stern & Co.	Sourabaya	New York	363,060		General Rubber Co., Inc.	Colombo	New York	156,800	
L. Littlejohn & Co., Inc.	Batavia	New York	481,600		Chas. T. Wilson Co., Inc.	Colombo	New York	72,440	
Winter, Ross & Co.	Batavia	New York	85,480		Rubber Trading Co.	Colombo	New York	33,600	
Winter, Ross & Co.	Tanjong Priok	New York	70,380		F. R. Grace & Co., Inc.	Colombo	New York	107,710	
Foreign Trading Co.	Batavia	New York	47,520		L. Littlejohn & Co., Inc.	Colombo	New York	36,970	
Catz American Co.	Batavia	New York	59,040		Fred Stern & Co.	Colombo	New York	22,400	449,022
Poel & Kelly	Batavia	New York	63,070		JULY 19. By the S. S. Lapanto, at New York.				
Schilthuis & Co.	Batavia	New York	67,520		Curry, McPhillips & Co.	Hull	New York	4,500	4,500
Schilthuis & Co.	Tanjong Priok	New York	56,520		* 96 cases, net 8,280 pounds in exports.				
Vernon Metal & Produce Co.	Batavia	New York	43,920		* Shortshipped, 2,000 lbs. in excess.				
Meyer & Brown, Inc.	Batavia	New York	38,400		BALATA.				
Rubber Trading Co.	Sourabaya	New York	17,280		JUNE 24. By the S. S. Garrillo, at New York.				
General Rubber Co.	Tanjong Priok	New York	155,600		Isaac Brandon & Bros.	Port Limon	New York	150	150
Joosten & Janssen	Tanjong Priok	New York	155,600		JUNE 26. By the S. S. Garrillo, at New York.				
Gaston Williams & Wigmore	Batavia	New York	100,140		W. Reed Williams, Inc.	Cristobal	New York	1,050	
Various	Batavia	New York	1,402,680		Various	Cristobal	New York	450	1,500
Various	Tanjong Priok	New York	438,360		JUNE 28. By the S. S. Defiance, at New York.				
	Shipment	Shipped	Pounds	Totals	Various	London	New York	3,900	3,900
JULY 7. By the S. S. Baltic, at New York.	Liverpool	New York	\$3,640	\$3,640	JULY 1. By the S. S. Alamo, at New York.				
Various	Liverpool	New York	\$3,640	\$3,640	American Trading Co.	Cartagena	New York	3,900	3,900
JULY 7. By the S. S. Yeterofu Maru, via Calcutta, at Seattle.					JULY 7. By the S. S. Colon, at New York.				
Mitsu & Co., Ltd.	Singapore	New York	113,580		G. Amineck & Co., Inc.	Cristobal	New York	9,600	
Mitsu & Co., Ltd.	Kobe	Seattle	14,400		Isaac Brandon & Bros.	Cristobal	New York	9,600	
William H. Stiles & Co.	Singapore	New York	102,600	230,580	Various	Cristobal	New York	9,500	19,950
JULY 7. By the S. S. Semmelidyk, at New York.					JULY 10. By the S. S. Advance, at New York.				
J. L. Johnstone & Co., Inc.	Batavia	New York	359,100		Neus, Hesselin & Co.	Cristobal	New York	1,050	1,050
J. L. Johnstone & Co., Inc.	Sourabaya	New York	203,440		JULY 11. By the S. S. Sagonia, at New York.				
General Rubber Co.	Batavia	New York	337,100		Various	London	New York	3,150	3,150
Firestone Tire & Rubber Co.	Batavia	New York	127,800		JULY 14. By the S. S. Lakehurst, at New York.				
Firestone Tire & Rubber Co.	Sourabaya	New York	110,340		J. S. Sembrada & Co.	Cristobal	New York	26,700	
Manhattan Rubber Mfg. Co.	Batavia	New York	23,400		Gaston, Williams & Wigmore	Cristobal	New York	4,650	
Poel & Kelly	Sourabaya	New York	384,587		Heilbron, Wolf & Co.	Cristobal	New York	3,300	
Winter, Ross & Co.	Batavia	New York	311,840		Antiquia Commercial Corp.	Cristobal	New York	3,000	
Winter, Ross & Co.	Batavia	New York	227,520		Various	Cristobal	New York	2,250	39,900
Schilthuis & Co.	Batavia	New York	265,140		JULY 15. By the S. S. Gen. H. F. Hodger, at New York.				
L. Littlejohn & Co., Inc.	Batavia	New York	42,700		G. Amineck & Co., Inc.	Cristobal	New York	4,500	
L. Littlejohn & Co., Inc.	Sourabaya	New York	35,460		Piza, Nepheus & Co.	Cristobal	New York	300	4,800
Peninsular Trading Agency	Batavia	New York	174,420		JULY 18. By the S. S. Maravel, at New York.				
Edward Maurer Co., Inc.	Sourabaya	New York	155,160		South & Central American Commercial Co.	Trinidad	New York	29,850	29,850
Edward Maurer Co., Inc.	Batavia	New York	77,400		JULY 20. By the S. S. Gen. O. H. Ernst, at New York.				
S. Kuh & Volk Co.	Batavia	New York	136,260		Pablo Calvet & Co.	Cristobal	New York	10,950	
Thos. F. Desmond & Co.	Batavia	New York	115,920		Antiquia Commercial Corporation	Cristobal	New York	3,000	13,950
Federal Export Corp.	Batavia	New York	93,060		JUNE 30. By the S. S. Magaro, at New York.				
The Goodyear Tire & Rubber Co.	Sourabaya	New York	91,500		G. Amineck & Co., Inc.	Trinidad	New York	34,350	
Meyer & Brown, Inc.	Batavia	New York	62,400		South & Central American Commercial Co.	Trinidad	New York	26,400	
New York Overseas Co.	Sourabaya	New York	57,240		Various	Trinidad	New York	1,950	62,700
Fred Stern & Co.	Java	New York	67,200		CENTRALES.				
Java - Holland - American Trading Co.	Batavia	New York	30,060		JUNE 24. By the S. S. Garrillo, at New York.				
Various	Batavia	New York	113,820	3,997,451	G. Amineck & Co., Inc.	Port Limon	New York	900	
JULY 8. By the S. S. Tain Maru, at Seattle.					Isaac Brandon & Bros.	Port Limon	New York	300	1,200
William H. Stiles & Co.	Singapore	New York	190,080		JUNE 27. By the S. S. San Jacinto, at New York.				
Mitsu & Co., Ltd.	Batavia	New York	102,420		United States Rubber Export Co.	Havana	New York	720	720
F. R. Henderson & Co.	Batavia	New York	62,100		JULY 1. By the S. S. Alamo, at New York.				
United Malaysian Rubber Co.	Singapore	Seattle	131,040		American Trading Co.	Cartagena	New York	6,200	6,200
L. Littlejohn & Co., Inc.	Sourabaya	New York	268,800		JULY 7. By the S. S. Colon, at New York.				
L. Littlejohn & Co., Inc.	Batavia	New York	42,700		Isaac Brandon & Bros.	Cristobal	New York	700	700
The Goodyear Tire & Rubber Co.	Singapore	Toronto	48,960		JULY 11. By the S. S. Grecian, at New York.				
The Goodyear Tire & Rubber Co.	Singapore	Akron	720	804,120	H. E. Botzow	Caracas	New York	400	400
JULY 10. By the S. S. Manitou, at New York.					JULY 14. By the S. S. Lakehurst, at New York.				
Chas. T. Wilson Co., Inc.	London	New York	38,520		J. S. Sembrada & Co.	Cristobal	New York	400	400
Rogers-Pyatt Shellac Co.	London	New York	9,900	48,420	JULY 15. By the S. S. Gen. H. F. Hodger, at New York.				
JULY 11. By the S. S. Sagonia, at London.					Pablo Calvet & Co.	Cristobal	New York	25,000	
L. Littlejohn & Co., Inc.	London	New York	194,499	194,499	G. Amineck & Co., Inc.	Cristobal	New York	15,500	
JULY 13. By the S. S. Santa Cruz, at San Francisco.					J. S. Sembrada & Co.	Cristobal	New York	4,700	
Firestone Tire & Rubber Co.	Singapore	San Fran.	588,240		Various	Cristobal	New York	2,000	47,200
Gates Rubber Co.	Singapore	Denver	164,340		JULY 16. By the S. S. Mexico, at New York.				
Thomas A. Desmond & Co.	Singapore	San Fran.	26,820		Various	Havana	New York	27,100	27,100
L. Littlejohn & Co., Inc.	Singapore	San Fran.	56,000	835,400	JULY 17. By the S. S. Lake Hilson, at New York.				
JULY 17. By the S. S. Kosembe, at New York.					G. Amineck & Co., Inc.	Cristobal	New York	1,500	
Chas. T. Wilson Co., Inc.	Colombo	New York	41,950	41,950	Various	Cristobal	New York	800	2,300
JULY 18. By the S. S. Tatsuma Maru, via Hongkong, at New York.					JULY 18. By the S. S. Maravel, at New York.				
Rubber Trading Co.	Singapore	New York	27,540		G. Amineck & Co., Inc.	Trinidad	New York	38,700	
Charles T. Wilson Co.	Singapore	New York	20,000		South & Central American Commercial Co.	Trinidad	New York	18,500	57,200
Pacific Trading Corp. of America	Singapore	New York	2,340		JUNE 20. By the S. S. Gen. O. H. Ernst, at New York.				
					Pablo Calvet & Co.	Cristobal	New York	7,200	
					W. R. Grace & Co.	Cristobal	New York	1,100	
					G. Amineck & Co., Inc.	Cristobal	New York	3,200	
					Heilbron, Wolf & Co.	Cristobal	New York	1,000	15,500

GUTTA PERCHA.

	Shipment from:	Shipped to:	Pounds.	Totals.
JULY 5. By the S. S. <i>Karimoon</i> , at New York.				
Various	Soerabaya	New York	45,300	45,300
JULY 7. By the S. S. <i>Sommelsdyk</i> , at New York.				
United Malaysian Rubber Co., Ltd.	Soerabaya	New York	52,500	52,500

GUTTA SIAK

JULY 1. By the S. S. <i>Monmouth</i> , at New York.				
L. Littlejohn & Co., Inc.	Singapore	New York	63,000	63,000

GUTTAS

JUNE 30.	By the S. S. <i>Elber</i> , at New York,		
Bush & Daniels.....	Hongkong	New York	8,700
JULY 5.	By the S. S. <i>Karimoen</i> , at New York,		
Various	Soerabaya	New York	9,900
JULY 7.	By the S. S. <i>Sommelsdyk</i> , at New York.		
United Ltd. Indian Rubber			
Co., Ltd.	Soerabaya	New York	8,700

MANICOBAS.

JULY 12.	By the S. S. <i>West Indian</i> , at New York.		
General Commercial Co..	Bahia	New York	1,450 1,450
JULY 12.	By the S. S. <i>Talisman</i> , at New York.		
W. R. Grace & Co.....	Bahia	New York	13,420 13,420

PONTIANAK.

JUNE 27. By the S. S. <i>Leather Castle</i> , at New York.			
Yaeger & Co.....	Shanghai	New York	215,400
United Malaysian Rubber Co., Ltd.	Shanghai	New York	197,400
Kidder, Peabody & Co..	Shanghai	New York	183,600
L. Littlejohn & Co., Inc.	Shanghai	New York	154,500
Various	Shanghai	New York	303,300

JULY 1. By the S. S. <i>Moumouth</i> , at New York.			
United Malaysian Rubber			
Co., Ltd.	Singapore	New York	59,100
Various	Singapore	New York	57,300
			116,400

JULY 5. By the <i>S. S. Karimoen</i> , at New York.				
Various	Singapore	New York	20,100	20,100

JULY 7. By the S. S. *Yotorofu Maru*, via Calcutta, at Seattle.
Meyer Bros. & Co..... Singapore San. Fran. 27,300 27,300

JULY 7. By the S. S. *Sommelsdyk*, at New York.
United Malaysian Rubber

Co., Ltd.	Soerabaya	New York	5,400
J. T. Johnstone & Co., Inc.	Batavia	New York	67,200

Various	Batavia	New York	539,400	1,115,400
Various	Soerabaya	New York	503,400	

JULY 16. By the S. S. <i>Persia Maru</i> , via Hongkong.			
F. R. Henderson & Co.	Singapore	New York	171,720
Gaston, Williams & Wig-			

JULY 18. By the S. S. *Tatsumo Maru*, via Hongkong, at New York.

F. R. Henderson & Co.,	Singapore	New York	75,300
Pacific Trading Corp. of			
America	Singapore	New York	59,700

UNITED STATES CRUDE RUBBER IMPORTS FOR 1919 (BY MONTHS).

	Plantations, 4,900	Paras, 2,141	Africans, 2,780	Centrals, 90	Guay. 144	Manicoba and Matto Grosso, 192	Totals for 1918	Totals for 1919
January	14,670	2,701	489	100	87	...	7,235	19,018
February	20,720	2,701	489	100	87	...	17,456	13,108
March	13,670	3,808	337	211	187	...	28,223	17,161
April	13,670	2,701	489	100	87	119	28,146	24,524
May	13,645	1,706	264	263	390	51	16,319	24,524

(Compiled by The Rubber Association of America, Inc.)

(Compiled by The Rubber Association of America, Inc.)

ITALIAN RUBBER IMPORTS AND EXPORTS, 1909-1917.

Crude Rubber Imported.			Manufactured Rubber Goods.		
	Tons.	Lire.		Imports. Lire.	Exports. Lire.
1917	6,127	55,144,890	1917	37,700,000	26,000,000
1918	5,782	47,578,300	1918	33,042,000	45,159,000
1915	5,367	42,938,000	1916	36,460,000	86,099,000
1914	3,054	21,378,000	1915	27,464,000	62,699,000
1913	2,844	25,598,700	1914	23,000,000	50,087,000
1912	2,419	18,438,000	1913	30,397,000	56,531,000
1911	2,419	30,248,750	1912	33,620,000	25,667,000
1910	1,878	21,939,000	1911	44,247,000	29,313,000
1909	32,111,000	21,313,000	1909		

¹One lira equals \$0.193.

OFFICIAL INDIA RUBBER STATISTICS FOR THE
UNITED STATES.

IMPORTS OF CRUDE AND MANUFACTURED RUBBER.

UNMANUFACTURED FROM	May			
	1918.		1919.	
	Pounds.	Value.	Pounds.	Value.
India rubber			165,219	\$46,000
From Portugal	128,770	\$51,357	84,822	23,750
United Kingdom	3,651,519	2,242,500	2,702,208	1,299,953
Canada	245,490	140,076	94,343	42,816
Central America	79,813	26,533	85,006	33,979
Mexico	332,923	157,434	118,215	61,995
Brazil	4,220,003	1,394,066	3,252,007	1,319,496
Peru	592,565	386,179	89,384	34,235
Other South America	321,500	143,048	56,841	19,175
Russia	34,511	16,611	42,824	20,448
Dutch East Indies	4,917,229	2,348,769	4,252,478	17,766,461
Other countries	179,556	105,913	461,175	167,199
Totals	49,707,336	\$23,017,325	55,478,181	\$22,441,641
Latex	246,395	125,313	53,370	25,826
Guayule	877,950	38,855	142,283	6,000
Latagum	991,687	56,130	1,597,331	207,256
Gutta Percha	100,800	16,238	744,486	116,722
Totals	1,366,832	\$206,312	2,960,829	\$492,089
Rubber scrap	700,214	53,849	1,451,278	119,573
Totals, unmanufactured	51,294,582	\$23,777,486	59,890,298	\$23,053,279
Chicle (dutable)	554,235	318,921	493,477	338,500
MANUFACTURED				
India rubber and gutta percha		\$18,830		\$123,016
India rubber substitutes		10,158	48,532	3,028

EXPORTS OF DOMESTIC MERCHANDISE

MANUFACTURED		
Automotive tires ¹	\$1,464,791	\$2,360,279
All other tires ²	66,658	190,725
Scrap and old	28,164	269,181
Reclaimed rubber	184,172	35,021
Belting, hose, and packing ³	495,451	638,348
Shoes ⁴	37,583	57,762
Shoes ⁵	65,835	154,440
Druggists' rubber sundries ⁶	72,991	126,296
Sanitary rubber articles ⁷	344,186	838,188
Other rubber manufactures ⁸	561,635	796,063
Totals, manufactured	\$3,165,910	\$5,235,176
Transportation pens, number	12,547	34,670

EXPORTS OF FOREIGN MERCHANDISE

UNMANUFACTURED				
Lucia rubber	901,931	\$470,184	347,738	\$134,699
Malaya	40,477	24,788	23,240	15,250
Gutta percha	.....	.....	.....	.....
Totals, unmanufactured	942,408	494,972	397,978	149,949
MANUFACTURED				
India rubber	.....	\$2,061	.....	.....
Gutta percha	.....	.....	.....	.....
Rubber substitutes, elastic, etc.	.....	.....	.....	\$8,000
Totals manufactured..	.....	\$2,061	.....	\$8,000
Chicle	28,418	12,270	10,700	.....

EXPORTS OF RUBBER GOODS TO NON-CONTIGUOUS TERRITORIES OF
THE UNITED STATES.

MANUFACTURED—			
To Alaska:			
Belting, hose and packing	.....	\$11,653	\$10,282
Boots and shoes.....	8,847	24,365	24,212
Other rubber goods.....	.....	4,608	.....
Totals	8,847	\$39,503	\$39,102
To Hawaii:			
Belting, hose and packing	.....	6,833	6,718
Automobile tires	.....	128,803	78,569
Other tires	.....	5,000	13,500
Other rubber goods.....	.....	18,358	14,431
Totals	.....	\$159,003	\$111,286
To Philippine Islands:			
Belting, hose and packing	.....	18,932	23,521
Boots and shoes.....	2,770	2,777	25,200
Tires	.....	115,325	120,097
Other rubber goods.....	.....	29,178	48,256
Totals	2,480	\$166,212	\$217,083
To Porto Rico:			
Belting, hose and packing	.....	2,343	1,868
Automobile tires	.....	90,497	15,200
Other tires	.....	1,394	1,055
Other rubber goods.....	.....	10,371	2,718
Totals	.....	\$104,605	\$20,821

¹ Details of exports of domestic merchandise by countries during May, 1919, are given on page 670 of this issue.

EXPORTS OF INDIA RUBBER MANUFACTURES AND INSULATED WIRE AND CABLE FROM THE UNITED STATES BY COUNTRIES, DURING THE MONTH OF MAY, 1919.

EXPORTED TO	Belting Hoses and Tubing Value	Ropes		Shoos		Dumpees, tension cables Value	Auto- mobile Value	Tires		Insulated Wire and Cable Value	All Other Rubber Manu- factures Value	Totals
		Pairs	Value	Pairs	Value			All Others Value				
EUROPE												
Austria and Madeira Islands.....											\$34	\$34
Belgium.....							\$2,340	\$2,340		\$53	564	5,353
Denmark.....	\$1,182					\$1,738	\$3,500			9,357	1,522	61,460
France.....	14,868			26,229	13,134	6,980	\$15,034	71,451	4,431	120,553	23,617	730,117
Gibraltar.....		56	\$33	143	150							491
Germany.....	500						4,791	20	670	147	6,158	6,158
Iceland and Faroe Islands.....		4,155	11,286	7,629	6,301			1,466		753	23,617	23,617
Italy.....	3,180								110	999	11,933	11,933
Netherlands.....	503								315	9,272	9,980	9,980
Norway.....	26,693			2,430	2,668	931	111,779	\$3,329	133,350	5,149	290,440	290,440
Spain.....	600					961	88,858			4,002	94,455	94,455
Sweden.....	61,633			12	50	306	157,237	8,264		37,552	16,832	251,233
Switzerland.....				26	40		10,076			49,812	45,198	105,126
Turkey in Europe.....											14,187	14,187
United Kingdom.....	32,852	132	498	4,108	14,367	10,625	199,431	9,650	6,178	122,315	396,213	396,213
Switzerland.....	82				800	576				1,916	2,748	2,748
TOTAL, EUROPE.....	\$145,823	4,380	\$12,114	61,085	\$14,575	\$32,549	\$1,131,160	\$98,877	\$211,240	\$329,456	\$2,003,952	
NORTH AMERICA												
Bermuda.....	316	1	\$14		1	\$25	\$109	\$103	\$37	\$346	\$641	\$641
British Honduras.....	289				711	121			407	31	1,601	1,601
Canada.....	30,370	4,577	16,656	8,091	8,603	18,879	114,948	3,543	5,548	158,164	356,412	356,412
Costa Rica.....	434				43	99	1,930	17	959	563	4,032	4,032
Guatemala.....	5,213	62	107	117	82	156		165		9,919	10,169	10,169
Honduras.....	1,199			1,496	143	2,833			85	171	5,734	5,734
Nicaragua.....	1,806			161	73	1,885	3,180	46	441	820	6,711	6,711
Panama.....	6,035	36	21	1,082	53	1,343	81,247	1,382	2,070	5,442	99,598	99,598
San Salvador.....	431				11	18,456	2,337	267	2,548	24,184	24,184	24,184
Mexico.....	60,135	20	33	3,514	642	13,335	71,888	7,359	28,651	27,842	211,862	211,862
Yucatan.....	52			184						206		206
Michoacan, Langley, etc.....	562	7,262	18,485	182	185	576			3,281	2,856	27,376	27,376
Newfoundland and Labrador.....	26								19	26	533	533
Barbados.....	26								757	1,689	17,822	17,822
Jamaica.....	963					1,046	12,669	978	82	118	5,630	5,630
Trinidad and Tobago.....	318					463	4,380	259		118	5,630	5,630
Other British West Indies.....	314					123	1,400	35	475	196	2,530	2,530
Cuba.....	33,442		246	28,131	24,317	14,538	121,259	23,073	62,567	46,748	326,190	326,190
Danish West Indies.....								351		493		493
Dutch West Indies.....	122						446	16	168	367	1,119	1,119
French West Indies.....	344						333	183	86	91	10,037	10,037
Haiti.....	68					136	9,967	316	97	10,509	10,509	10,509
Dominican Republic.....	1,354			36	30	1,160	7,475	188	1,124	1,040	12,391	12,391
TOTAL, NORTH AMERICA.....	\$158,847	12,102	\$36,014	44,078	\$38,736	\$53,883	\$466,241	\$39,945	\$107,512	\$251,209	\$1,131,577	
SOUTH AMERICA												
Argentina.....	\$13					\$1,588	\$21,997	\$11,694	\$40,070	\$3,298	\$78,660	\$78,660
Bolivia.....	8,440						6,564		2,346	135	17,535	17,535
Brazil.....	40,569			9,683	\$8,200	4,850	113,834	7,109	140,341	29,983	344,906	344,906
Chile.....	35,746						25,632	7,786	11,400	10,420	118,544	118,544
Colombia.....	216			607	484	1,506	17,538	1,963	6,032	3,847	31,600	31,600
Ecuador.....	179						2,097		1,662	74	5,677	5,677
British Guiana.....	114			72	89			96	630	350	7,101	7,101
Dutch Guiana.....	176						550		156	79	1,013	1,013
Paraguay.....	764										264	264
Peru.....	31,141	39	8,277	1,858	1,344	1,642		115	21,103	1,961	71,634	71,634
Uruguay.....	2,245				6,574	2,471	53,700	1,391	93,578	6,696	168,142	168,142
Venezuela.....	1,178					1,653	8,078	291	1,713	1,037	13,925	13,925
TOTAL, SOUTH AMERICA.....	\$111,811	39	\$977	20,878	\$17,992	\$19,573	\$277,025	\$25,455	\$349,631	\$57,880	\$858,998	
ASIA												
China.....	\$9,472	28	\$105	11,274	\$11,367	\$1,121	\$49,471	\$1,019	\$8,451	\$5,372	\$86,378	\$86,378
Japanese China.....	383					193		357		127	613	613
Chosen.....										38	395	395
British India.....	10,451			553	418	976	11,386	283	122	23,965	47,601	47,601
Straits Settlements.....	728					212	63	52,202		535	54,193	54,193
Other British East Indies.....	3,200						63	109		6,064	6,064	6,064
Dutch East Indies.....	838			2	2	317	8,324	295	78,890	1,957	90,623	90,623
French East Indies.....							1,198				1,198	1,198
Hongkong.....	40,324	1,881	4,351	6,886	6,338	364	46,933	19	2,561	22,342	117,332	117,332
Japan.....	2,667			180	264				813	3,334	7,018	7,018
Russia in Asia.....	47							41	505	133	736	736
Siam.....								410			410	410
Turkey in Asia.....												
TOTAL, ASIA.....	\$68,110	1,907	\$4,459	21,141	\$20,191	\$3,257	\$177,224	\$2,869	\$91,556	\$63,595	\$431,261	
OCEANIA												
Australia.....	\$7,633	216	\$995	5,252	\$3,476	\$5,472	\$43,976	\$2,768	\$17,965	\$25,483	\$106,768	\$106,768
New Zealand.....	6,264	2,515	3,648	5,565	717	1,102	\$1,970			6,872	100,168	100,168
Other British Oceania.....	140										134	134
French Oceania.....	138			118	81	8	2,628	183		676	3,914	3,914
German Oceania.....				75	85		612			95	792	792
Philippine Islands.....	23,521	69	175	24,817	25,034	1,910	100,843	19,254	31,954	46,346	249,037	249,037
TOTAL, OCEANIA.....	\$37,596	2,791	\$4,818	30,952	\$28,553	8,492	\$229,625	\$22,405	\$49,919	\$79,501	\$603,913	
AFRICA												
Belgian Congo.....	\$1,565							\$10,292	\$4	\$27	\$1,565	\$1,565
British West Africa.....	33									12	10,395	10,395
British South Africa.....	103,617	34	\$75	7,573	\$6,240	\$9,312	60,208	1,220	28,907	14,306	223,891	223,891
British East Africa.....	2,731						551				551	551
French Africa.....	28,205						7,777			7	10,513	10,513
Portuguese Africa.....							20			95	28,320	28,320
AFRICA.....								168			168	168
TOTAL, AFRICA.....	\$136,171	24	\$75	7,573	\$6,240	\$9,342	\$78,996	\$1,224	\$28,930	\$14,427	\$275,405	
TOTALS.....	\$638,348	21,243	\$57,766	185,707	\$154,440	\$126,296	\$2,360,279	\$190,725	\$838,188	\$796,068	\$5,162,106	

(Compiled by the Bureau of Foreign Commerce, Department of Commerce, Washington, D. C.)

(Compiled by the Bureau of Foreign Commerce, Department of Commerce, Washington, D. C.)

RUBBER STATISTICS FOR ITALY.

IMPORTS OF CRUDE AND MANUFACTURED RUBBER.

Two Months Ended February.

	1918.		1919.	
	Quintals.	Lira.	Quintals.	Lira.
UNMANUFACTURED				
India rubber and gutta percha raw and reclaimed:				
From Great Britain	583	.....	8,111	.....
India and Ceylon	51	.....	6,455	.....
Straits Settlements	444	.....	754	.....
French African Colonies	268	.....	4,766	.....
Brazil	1,136	.....	97	.....
Other countries	864	.....	.....	.....
Totals	4,569	4,959,900	17,235	18,958,500
Rubber scrap	168	20,160	.....	.....
MANUFACTURED				
India rubber and gutta percha:				
Threads	43	96,800	80	176,600
Sheets, including hard rubber	12	11,400	75	90,000
Tubes:				
Elastic fabric	39	38,100	.....	.....
Other forms .....	.....	.....	17	18,700
Belting	97	106,700	61	67,100
Rubber-coated fabrics—pieces .....	.....	.....	30	65,000
For carding combs	37	48,100	1	1,500
Other forms	2	3,000	.....	.....
Boots and shoes—dozen pairs	3,519	.....	6,471	.....
From France	192	47,940	2	77,676
United States .....	.....	.....	.....	.....
Other countries	981	.....	.....	.....
Totals .....	.....	.....	.....	.....
Elastic webbing	26	52,000	43	86,000
Manufactures n. e. s.:				
From cut sheets	1	2,600	.....	.....
Elastic fabric	1	12,000	518	621,600
Tires and tubes:				
From France	466	.....	969	.....
Great Britain	139	1,125,000	.....	1,746,000
Other countries .....	.....	.....	1	.....
Other rubber manufactures:				
From France	850	.....	304	.....
Great Britain	177	1,365,600	3,547	4,509,600
United States	104	.....	6	.....
Other countries .....	.....	.....	.....	.....
Totals, manufactured .....	.....	2,991,400	.....	7,459,176
Total imports .....	.....	7,959,300	.....	26,417,676

EXPORTS OF CRUDE AND MANUFACTURED RUBBER.

Two Months Ended February.

	1918.		1919.	
	Quintals.	Lira.	Quintals.	Lira.
UNMANUFACTURED				
India rubber and gutta percha raw and reclaimed:				
To Spain	583	.....	1,632	.....
United States	113	.....	.....	.....
Totals	700	245,000	1,632	571,200
MANUFACTURED				
India rubber and gutta percha—				
Threads	18	39,600	50	110,000
Sheets:				
Cut sheets	9	12,000	18	36,000
Elastic fabric	6	163,000	1	800
Other kinds, including hard rubber	18	18,000	2	2,800
Tubes:				
From cut sheets	3	6,600	.....	.....
Elastic fabric	8	64,000	160	80,000
Other forms	30	53,200	48	36,100
Belting	15	35,000	76	76,000
Rubber-coated fabrics—pieces	42	38,400	1	1,200
Elastic webbing	2	4,100	165	313,500
Manufactures of india rubber and gutta percha n. e. s.:				
From cut sheets	36	59,200	.....	.....
Elastic fabrics	17	18,700	21	23,160
Tires and tubes:				
To France	131	.....	963	.....
Great Britain	921	.....	121	.....
Spain .....	.....	.....	1	.....
Switzerland .....	.....	2,343,900	.....	1,976,000
Australia .....	.....	.....	421	.....
Argentina	1	.....	274	.....
Brazil	358	.....	268	.....
Other countries	319	.....	533	.....
Other rubber manufactures:				
To France	699	.....	32	.....
Great Britain	26	.....	.....	.....
Spain	7	.....	.....	.....
Switzerland	103	.....	26	.....
Egypt	1	367,000	.....	196,000
Argentina	1	.....	.....	.....
Brazil	17	.....	.....	.....
Uruguay	8	.....	.....	.....
Other countries	27	.....	69	.....
Total exports .....	.....	2,528,400	.....	3,421,900

1 Quintal=220.46 pounds.

1 Lira=3.6193.

UNITED KINGDOM RUBBER STATISTICS.

IMPORTS.

May.

	1918.		1919.	
	Pounds.	Value.	Pounds.	Value.
UNMANUFACTURED				
Crude rubber:				
From:				
Dutch East Indies	28,300	£27,284	2,142,700	£212,573
French West Africa	5,000	560	16,400	790
Gold Coast	9,900	1,063	6,000	633
Other African countries	660,600	68,148	416,300	38,915
Peru	9,700	1,096	17,200	9,521
Brazil	35,400	4,258	2,163,000	229,168
British India	11,700	1,308	666,100	67,643
Straits Settlements and dependencies, including Luan .....	.....	.....	.....	.....
Federated Malay States	655,600	84,710	6,211,700	638,041
Ceylon dependencies	279,800	34,289	6,555,100	673,939
Other countries	1,309,400	157,985	3,454,400	352,028
Totals	3,205,900	£380,761	22,243,700	£2,278,426
Waste and reclaimed rubber	10,200	428	412,200	7,856
Totals	3,216,100	£381,189	22,655,900	£2,286,282
Gutta percha	649,712	77,430	339,760	50,593
MANUFACTURED				
Boots and shoes—dozen pairs	980	£10,640	3,297	£5,445
Waterproofed clothing .....	.....	.....	31,063	140,782
Automobile tires and tubes .....	.....	.....	442	4,251
Motorcycle tires and tubes .....	.....	.....	.....	1,456
Carriage tires and tubes .....	.....	.....	.....	1,766
Bicycle tires and tubes .....	.....	.....	.....	483
Insulated wire .....	.....	.....	.....	.....
Totals	980	£42,145	3,297	£54,184
EXPORTS.				
UNMANUFACTURED				
Waste and reclaimed rubber	979,000	£15,886	602,900	£15,656
MANUFACTURED				
Boots and shoes—dozen pairs	9,503	£46,804	.....	£97,635
Waterproofed clothing .....	.....	14,243	4,982	14,647
Insulated wire .....	.....	1,804	.....	75,279
Submarine cables .....	.....	247,150	.....	37,344
Carriage tires and tubes .....	.....	14,674	.....	18,246
Automobile tires and tubes .....	.....	84,413	.....	239,187
Motorcycle tires and tubes .....	.....	14,839	.....	40,895
Bicycle tires and tubes .....	.....	18,314	.....	167,949
Other rubber manufactures .....	.....	160,144	.....	235,933
Totals	9,503	£603,565	4,982	£927,115

EXPORTS—COLONIAL AND FOREIGN.

	1918.		1919.	
	Quintals.	Lira.	Quintals.	Lira.
UNMANUFACTURED				
Crude rubber:				
To Belgium .....	.....	.....	450,500	£40,901
France	1,173,200	£178,946	1,844,900	219,843
Italy	2,162,700	275,762	1,378,300	145,616
United States	1,184,100	512,751	2,803,100	279,496
Other countries	182,600	25,350	1,489,700	170,244
Totals	8,004,600	£992,809	8,026,500	£856,100
Waste and reclaimed rubber	112	5	609	27
Totals	8,004,712	£992,814	8,027,109	£856,127
Gutta percha	11,200	2,263	230,960	25,863
MANUFACTURED				
Boots and shoes—dozen pairs	28	£109	2,337	£4,613
Waterproofed clothing .....	.....	71	.....	.....
Insulated wire .....	.....	738	.....	.....
Automobile tires and tubes .....	.....	3,860	.....	17,700
Motorcycle tires and tubes .....	.....	316	.....	3,069
Bicycle tires and tubes .....	.....	1,097	.....	.....
Carriage tires and tubes .....	.....	75	.....	570
Totals	28	£5,875	2,337	£25,979

THE MARKET FOR COTTON AND OTHER FABRICS.
NEW YORK.

PRICES of American cotton have steadily risen during the past month, and on July 23, middling uplands, spot cotton reached 36.20 cents, compared to 29.49 cents last year. Later in the month the market weakened and quotations on July 28 were 35.15 cents. The strong position of American cotton is due to the poorest crop in many seasons, and the extraordinary world demand that is estimated to be 17,000,000 bales, while the estimated supply is 16,500,000 bales.

EGYPTIAN COTTON. The demand continues from abroad for the cotton still remaining in the hands of the Commission, and orders have been coming in freely. The steam-pressed stock shows a heavy shrinkage, and on June 13 stood at only 131,346

bales, including 18,694 bales of linters; the unpressed stock in the hands of the Commission is very small.

All desirable types have practically disappeared, and the demand is for types which spinners previously left severely alone. There is little doubt that the entire stocks of the Commission will be taken up by buyers and the carry-over at the end of the season will be small and composed principally of inferior cotton and linters. In Liverpool, prices continue to rise with the increased demand, and consignment cotton is finding ready buyers at full prices.

SEA ISLAND COTTON. The demand in Southern markets has been greatly in excess of the supply, and a few holders have sold on the higher markets. The general tendency, however, in view of the smallness of stocks and the universal demand, is to await future developments. The new Mead cotton being developed by the Bureau of Plant Industry to replace Sea Island cotton is giving promise of success.

DUCKS AND DRILLS. The buying interest in these materials has been active, and the mills appear to be well sold ahead. The market undertone has been strong and prices on all grades have advanced.

TIRE FABRICS. The demand for spot and future deliveries has been active, and consumers' inquiries have included deliveries for the first six months of 1920. Prices are higher.

Long-staple cotton is very scarce; however, the indications are that tire fabrics will be higher, due to a new cost basis, irrespective of the price of raw cotton. This is partly due to higher wages, as formerly cotton mills paid lower wages than most industries. The stoppage of immigration has eliminated this low-priced labor, so that the mills are now forced to compete for help-

in the general labor market, which will eventually bring the scale of wages on a par with other industries and increase the production cost of tire fabrics.

NEW YORK QUOTATIONS.

JULY 26, 1941

Prices subject to change without notice.

ASBESTOS CLOTH:

Brake lining, 2½ lbs. sq. yd., brass or copper insertion	lb.	.85	@
2¼ lbs. sq. yd., brass or copper insertion	lb.	.90	@

BURLAPS:

32—7-ounce	..... 100 yards	11.50	@
32—8-ounce	.....	12.50	@
40—7½-ounce	.....	14.40	@
40—9-ounce	.....	14.50	@
40—10-ounce	.....	16.00	@
40—10½-ounce	.....	16.25	@
45—7½-ounce	..... 100 yards	15.75	@
45—8-ounce	.....	16.00	@
43—9¼-ounce	.....	*15.60	@
48—10-ounce	.....	18.25	@

DRILLS

38-inch 2.00-yard	..... yard	.41 @
40-inch 2.47-yard	.....	.33 3/4 @
52-inch 1.90-yard	.....	.43 3/4 @
52-inch 1.95-yard	.....	.43 3/8 @
60-inch 1.52-yard	.....	.56 3/4 @

DUCK:

CARRIAGE CLOTH :

38-inch 2.00-yard enameling duck.....	yard	.40	@
38-inch 1.74-yard .....		.46	@
72-inch 16.66-ounce .....		.88½	@
72-inch 17.21-ounce .....		.91¾	@

MECHANICAL:

Hose .....	..pound	.68	@
Belting .....		.70	@

CONSUMPTION OF COTTON FABRICS AND YARN DURING 1917

Kind of Fabric.	American. —pounds.	Egyptian	Combed Egyptian	Peeler.	Combed Peeler.	Sakell-rules	Combed Sakell-rules	Combed Sea Island.	Combina- tions.	Totals.
COTTON WOVEN FABRICS.										
Duck										
Belting duck	16,546,383			757,237						17,303,620
Hoss duck	7,153,468	34,711	48,606						175	9,536,960
Belting and hose										
Duck	9,097,469									9,097,469
Miscellaneous	13,538,414	13,742		2,508				217,500	11,430	13,801,144
Total duck	48,635,674	48,013	48,646	777,745				217,500	11,605	49,379,183
Tire fabric										
Brecker	1,266,239	592,784	149,178	411,893	28,386			520,282		2,968,462
Builder	2,274,534	21,362,390	31,683,915	4,544,530	2,451,944			15,680,785		77,998,098
Chambré	97,652	1,755,865	69,866	1,022,069	29,324					2,977,559
Miscellaneous	1,840,374	3,296,069	1,459,781	4,870,115	1,477,766	264,917	865,508	1,261,964		15,036,494
Totals, tire fabric	5,478,799	27,007,108	33,362,740	10,848,307	2,664,917	264,917	565,508	17,654,814		98,980,613
Cord fabrics										
Sheetings—										
General	30,184	6,871	194,376	336,222	38,360		259,584	4,705,585		5,060,182
Miscellaneous	27,557,635	2,782	41,463	7,216				18,333		27,627,529
Total sheetings	5,348,965	45,217		100,175	170,392			199,338		5,864,387
Total cord fabrics	32,960,600	47,999	41,463	107,491	170,392			217,917		33,491,916
Onabures	4,779,854			10,496						4,790,350
Trill	10,422,309			8,426						10,430,735
Cap and working	555,483									555,483
Miscellaneous	3,698,540		187,484	108,000	6,990			50,677		4,174,483
Grand totals, cotton woven fabrics	106,536,443	27,173,773	33,804,709	12,286,687	4,202,172	264,917	825,092	22,657,547	11,605	207,762,945

COTTON KNIT FABRICS.

COTTON YARN AND CORD

HOLLANDS, 40-INCH:

Acme	yard	.23 @
Endurance	yard	.27½ @
Penn	yard	.30 @

OSNABURGS:

40-inch 2.35-yard	yard	.10 @
40-inch 2.48-yard	yard	.10 @
37½-inch 2.42-yard	yard	.12 @

RAINCOAT FABRICS:

COTTON:

Bombazine 64 x 60 water-repellent	yard	.4 @
60 x 48 water-repellent	yard	.4 @
Cashmeres, cotton, wool, Scotch, tan	yard	*.77½ @
cotton, blue and black	yard	*.85 @
Useless	yard	.73 @
Twills 64 x 72	yard	.39 @ 36
64 x 102	yard	.39 @ 44
Twill, mercerized, Scotch, tan and olive	yard	.34 @
blue and black	yard	.36 @
navy	yard	.37½ @
Tweed	yard	.55 @ 74
printed	yard	.90 @ 35
Plaids 60 x 48	yard	.22 @
56 x 44	yard	.21 @
Repp	yard	.42 @ 40
Surface prints 60 x 48	yard	.21 @
64 x 60	yard	.25 @

IMPORTED WOOLLEN FABRICS SPECIALLY PREPARED FOR RUBBERIZING

—PLAIN AND FANCIES:

63-inch, 3¼ to 7½ ounces	yard	1.30 @ 3.50
36-inch, 2¼ to 5 ounces	yard	.75 @ 1.90

IMPORTED PLAID LINING (UNION AND COTTON):

63-inch, 2 to 4 ounces	yard	.90 @ 1.85
36-inch, 2 to 4 ounces	yard	.55 @ 1.10

DOMESTIC WORSTED FABRICS:

36-inch, 4½ to 8 ounces	yard	.65 @ 1.30
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DOMESTIC WOVEN PLAIN LININGS (COTTON):

36-inch, 3¼ to 5 ounces	yard	.21 @ 1.2
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SHEETINGS:

JACKET:

Delaware	yard	*.3 @
Schuykill	yard	*.6 @

SILKS:

Canton, 38-inch	yard	*.38½ @
Schappe, 36-inch	yard	*.63 @

TIRE FABRICS:

17¼-ounce Sea Island, combed	yard	1.45 @
17¼-ounce Egyptian, combed	yard	1.20 @
17¼-ounce Egyptian, carded	yard	*1.12 @
17¼-ounce Peleers, combed	yard	1.18 @
17¼-ounce Peleers, carded	yard	.95 @

*Nominal.

EGYPTIAN COTTON CROP MOVEMENT.

From August 1, 1918, to August 16, 1919.

	1918-1919.	1917-1918.	1916-1917.
To Liverpool	bales 183,229	155,656	185,199
Manchester	91,087	91,597	120,868
Other United Kingdom ports	5,537	115,284	
Total shipments to Great Britain	279,853	363,037	306,067
To France	16,605	20,711	22,432
Spain	10,290	4,684	10,221
Italy	39,207	22,651	26,959
Switzerland	20,379	3,350	17,739
Russia	3,963	550	22,261
Greece	113,441	51,946	99,677
Total shipments to Continent	113,441	51,946	99,677
To India	11,517	12,464	9,205
Japan	11,517		
To United States	45,954	38,763	105,215
Total shipments to all parts	450,765	466,210	520,164
Total crop (Interior gross weight), cantars ¹	6,315,841	5,126,199	

¹A cantar equals 98 pounds.

(Compiled by Davies, Benachi & Co.)

THE MARKET FOR CHEMICALS AND COMPOUNDING INGREDIENTS.

NEW YORK.

PRONOUNCED STRENGTH and activity have characterized the base metal market during July. Lead and spelter have been in large demand and prices have advanced, resulting in a stronger market for lead pigments and zinc oxide.

Business in rubber chemicals and compounding ingredients has been fairly good for this time of the year, when the mills are not generally active. The indications point to an early resumption of contract business, due to the belief that production costs will be higher.

ANILINE OIL. The excellent domestic and foreign demand has resulted in increased prices, and producers predict a further advance.

BARYTES. The undertone has been firm, but to the active position of lithopone and the steady call from foreign sources. Prices have not changed.

BENZOL. The demand has been very active and visible supplies have been rapidly absorbed by foreign and domestic orders. Prices are firm and unchanged.

CARBON TETRACHLORIDE. There has been a surplus and a very quiet market, resulting in lower prices.

TIRE
FABRICSJENCKES
SPINNING
COMPANYPAWTUCKET
RHODE ISLAND

AKRON OFFICE
407 Peoples Savings & Trust
Co. Building.

DRY COLORS. There has been a steady improvement in this market and prices are steady, due to the increasing cost of production. Iron blues were weak and lower early in the month, but rallied later.

LITHARGE. The active call for red lead is reflected in the strong undertone in the market for litharge. Prices are firm and unchanged.

LITHIUMS. This has been very active and producers are sold up to the end of the season. Prices are very firm and unchanged.

MAGNESIA.—Reports from California mines indicate a shortage of magnesia and a consequent higher schedule this autumn which will certainly influence Eastern prices of heavy calcined magnesia.

WHITING. The call for this material has been steady and producers have been able to supply the demand at unchanged prices.

ZINC OXIDE. All grades have been going well and leading producers announce there will be no price changes this year.

NEW YORK QUOTATIONS.

July 26, 1919.

Prices subject to change without notice

ACCELERATORS, ORGANIC.

Accelerator N. C.	..lb.	.50	@
Accelerene	..lb.	3.70	@
Acceleron	..lb.	.55	@
Aldehyde ammonia crystals	..lb.	1.00	@ 1.5
Aniline oil	..lb.	.24	@
Excelsite	..lb.	.85	@
Excelsite	..lb.	.93	@ 1.05
Hexamethylene tetramine (powdered)	..lb.	3.50	@
Paraphenylenediamine	..lb.	*.50	@
Tenolite	..lb.	.50	@ .55
Thiocarbamide	..lb.	.50	@
Velocite	..lb.	*.60	@

ACCELERATORS, INORGANIC.

Lead, dry red (bbis.)	..lb.	.10½	@
sublimed blue (bbis.)	..lb.	.08½	@
sublimed white (bbis.)	..lb.	.08½	@
white, basic carbonate (bbis.)	..lb.	*.27	@
Lead, oleate	..lb.	.01½	@
Lime, flour	..lb.	.09½	@
Litharge, domestic	..lb.	.12½	@
imported	..lb.	.10	@
sublimed	..lb.	.12½	@
Magnesium, carbonate	..lb.	.11	@
calcined heavy (Thistle)	..lb.	.35	@
light (Manhattan)	..lb.	.07½	@
heavy	..lb.	.65	@
light	..lb.	.24	@
Magnesium oxide	..lb.	.04	@ .05
Magnesite	..lb.	.04	@ .05

ACIDS.

Acetic, 28 per cent (bbis.)	..cut.	2.75	@ 3.00
glacial, 99 per cent (carbonyl)	..cut.	12.00	@ 12.44
Cresylic (97% straw color)	..gal.	.90	@
(95% dark)	..gal.	.85	@
Muriatic, 20 degrees	..cut.	1.25	@ 1.40
Nitric, 36 degrees	..cut.	6.00	@ 6.50
Sulphuric, 66 degrees	..ton	16.00	@ 20.00

ALKALIES.

Caustic soda, 76 per cent (bbis.)	..lb.	.04½	@
Soda ash (bbis.)	..lb.	.03½	@

COLORS.

Black:			
Bont, powdered	..lb.	.05	@
granulated	..lb.	.09	@
Carbon, black (sacks, factory)	..lb.	.12	@ .18
Drop	..lb.	.05½	@ .15
Ivory black	..lb.	.16	@ .30
Lampblack	..cut.	1.5	@
Oil soluble aniline	..lb.	*.40	@
Rubber black	..lb.	.07	@

Blue:

Cobalt	..lb.	.25	@ .35
Prussian	..lb.	.60	@ .70
Ultramarine	..lb.	.21	@

Brown:

Iron oxide	..lb.	.04	@ .06
Sienna, Italian, raw and burnt	..lb.	.04½	@ .04
Spanish	..lb.	.04	@ .06
Umber, Turkey, raw and burnt	..lb.	.02½	@ .03½
Vandyke	..lb.	.02½	@ .03½

Green:

Chrome, light	..lb.	.35	@ .40
medium	..lb.	.40	@ .50
dark	..lb.	.50	@ .60
commercial	..lb.	.06	@ .15
Oxide of chromium (casks)	..lb.	.75	@ .85

Red:

Antimony, crimson, sulphuret (casks)	..lb.	.48	@
crimson, "Mephisto" (casks)	..lb.	*.28	@
Antimony, golden sulphuret (casks)	..lb.	.24	@
golden, "Mephisto" (casks)	..lb.	*.28	@
golden sulphuret (States)	..lb.	.38	@
red sulphuret (States)	..lb.	.25	@
vermillion sulphuret	..lb.	.50	@
Arsenic, red sulphide	..lb.	.25	@
Indian	..lb.	.08	@
Toluidine toner	..lb.	4.00	@ 4.50
Iron oxide, reduced grades	..lb.	.12	@
pure bright	..lb.	.16	@
Spanish	..lb.	.01	@
Venetian	..lb.	.12	@
Oil soluble aniline, red	..lb.	*1.80	@
orange	..lb.	*1.25	@
Oximony	..lb.	.18	@
Vermilion, English, pale, medium	..lb.	.63	@
artificial	..lb.	.35	@ .40

White:

Aluminum bronze, C. P.	..lb.	.58	@
superior	..lb.	.55	@
Lithopon, domestic	..lb.	.07	@ .07½
Ponolith (carloads, factory)	..lb.	1.17	@ .07½
Rubber-makers' white	..lb.	.06½	@ .09½

Zinc oxide, Horsehead (less carload, factory):

"XX"	..lb.	.09½	@
"Special"	..lb.	.09½	@
French process, red seal	..lb.	.09½	@
sublimed white seal	..lb.	.11½	@
(States)	..lb.	.08½	@
Azo, ZZ, lead (less carload, factory)	..lb.	.09½	@
ZZ, under 5% leaded (less carload, factory)	..lb.	.08½	@
Z, 8-10% leaded (less carload, factory)	..lb.	.08½	@

Yellow:

Cadmium, sulphide, yellow, light, orange	..lb.	2.00	@
red	..lb.	1.85	@
Chrome, light and medium	..lb.	.27	@
Ochre, domestic	..lb.	.03	@
imported	..lb.	.04½	@ .05½
Oil soluble aniline	..lb.	*1.20	@
Zinc chromate	..lb.	.45	@ .48

COMPOUNDING INGREDIENTS.

Aluminum flake (bbls. factory)	..ton	26.60	@ 28.00
(sacks factory)	..ton	23.75	@ 25.00
Aluminum oxide	..lb.	*.18	@
Ammonia carbonate, powdered	..lb.	.13½	@ .13½
Asbestos (carloads)	..ton	25.00	@
Asbestos (bags)	..ton	35.00	@
Avicel compound	..lb.	.15	@
Barium, carbonate, precipitated	..ton	55.00	@
barium sulphide, precipitated	..ton	.07	@
dust	..lb.	.03½	@
Barytes, pure white	..ton	35.00	@
off color	..ton	25.00	@
uniform floated	..ton	35.00	@
Basofo	..lb.	.04	@
Blanc fixe	..lb.	.05	@
Bone ash	..lb.	.05	@
Chalk, precipitated, extra light	..lb.	.05½	@
Chalk, precipitated, heavy	..lb.	.03	@ .64
China clay, domestic	..ton	25.00	@
imported	..ton	65.00	@
Shawnee	..ton	15.00	@
Cork floor	..lb.	.53	@
Cotton linters, clean mill run, f. o. b. factory	..lb.	.04	@
Fossil flour (powdered)	..ton	60.00	@
(bolts)	..ton	65.00	@
Diatomite	..lb.	.03	@
Glue, high grade	..lb.	.35	@ .40
medium	..lb.	.16	@ .28
low grade	..lb.	.12	@ .15
Graphite, flake (400-pound bbl.)	..lb.	.10	@ .25
amorphous	..lb.	.04	@ .08
Ground glass FF (bbis.)	..lb.	.03	@
Infusorial earth (powdered)	..ton	60.00	@
(bolts)	..ton	65.00	@
Mica, powdered	..lb.	.03½	@ .06
Flume stone, powdered (bbl.)	..lb.	.05	@ .08
Rotten stone, powdered (carload, bbl.)	..lb.	.02½	@ .04½
Rub-B-Gum	..lb.	*.20	@ .25
Silex (silica)	..ton	22.00	@ 40.00
Starch, powdered	..cut.	25.00	@
(carload, bags)	..cut.	6.02	@
Talc, powdered	..ton	20.00	@
Tripol earth, air-floated	..ton	25.00	@
Tyrolith	..ton	85.00	@

Whiting, Alba (carloads).....	.80 @ .50
Columbia.....	.80 @ .50
Commercial.....	1.75 @ 1.30
English cliffstone.....	1.75 @ 2.00
Gilders.....	1.30 @ 1.35
Paris, white, American.....	1.50 @ 1.75
Quaker.....	.70 @ .80
Wood pulp, imported.....	.0394 @
Wood flour, American.....	.0194 @

MINERAL RUBBER.

Gilsonite.....	47.50 @ 57.50
Genasco (carloads factory).....	55.00 @
Hard hydrocarbon.....	57.00 @
K. N.....	100.00 @
M. R. K.....	40.00 @ 60.00
M. R. X.....	100.00 @
Pioneer, carload, factory.....	50.00 @
less carload, factory.....	55.00 @
Raven M. R.....	50 @ .70
Refined Elaterite.....	175.00 @
Richmond.....	65.00 @
No. 64.....	55.00 @
318/320 M. P. hydrocarbon.....	50.00 @ 55.00
Robertson M. R. Special (carloads, factory).....	80.00 @
M. R. (carloads, factory).....	55.00 @
Rubphon.....	60.00 @
M. R. (less carloads, factory).....	50.00 @
Walpole rubber flux (factory).....	.05 @

OILS.

Castor, No. 1, U. S. P.....	.22 @
No. 1, U. S. P.....	.20 @
No. 3, U. S. P.....	.20 @
Corn, refined Argo.....	28.56 @
Cotton.....	5.27 @
Glycerine (98 per cent).....	.21 @
Glycerole.....	.53 @
Linseed, raw (carloads).....	2.17 @
linseed compound.....	.85 @
Palm (Niger).....	.18 @
Peanut.....	2.15 @
Petrolatum.....	.0634 @
Petroleum grease.....	.04 @
Pine, steam distilled.....	1.50 @ .78
Rapeseed, refined.....	1.60 @
blown.....	1.70 @
Rosin.....	.75 @ .17
Soya bean.....	.20 @
Tar.....	.40 @ .46

RESINS AND PITCHES.

Castella gum.....	.60 @
Tar, rectified.....	.25 @
kin.....	.25 @
Pitch, Burgundy.....	.0794 @
coal tar.....	.0294 @
pine tar.....	.0412 @
ponto.....	.14 @
Resin, Pontianak, refined.....	None
granulated.....	None
fused.....	None
Rosin, K.....	20.80 @
powdered.....	.17 @
Shellac, fine orange.....	1.15 @

SOLVENTS.

Acetone (98.99 per cent drums).....	.14 @
methyl (drums).....	1.10 @
Benzol, water white.....	.2312 @ .27
Beta-naphthol, resublimed.....	1.00 @ 1.10
chloroform.....	.40 @ .46
Carbon bisulphide (drums).....	.065 @ .07
tetrachloride (drums).....	.1174 @
Naphtha, motor gasoline (steel bbls.).....	.0294 @
73 @ 70 degrees (steel bbls.).....	None
68 @ 70 degrees (steel bbls.).....	None
V. M. & P. (steel bbls.).....	.2312 @
Toluol, pure.....	.24 @ .28
Turpentine, spirits.....	1.20 @
wood.....	1.30 @
Osmaco reducer.....	.30 @
Xylo, pure.....	.35 @
commercial.....	.30 @ .45

SUBSTITUTES.

Black.....	.11 @ .30
White.....	.13 @ .24
Brown.....	.16 @ .23
White factice.....	.10 @ .22
White factice.....	.11 @ .22
Paragol soft and medium (carloads).....	20.58 @
hard.....	21.08 @

VULCANIZING INGREDIENTS.

Lead, black hyposulphite (Black Hypo).....	.52 @ .56
Orange mineral, domestic.....	.1314 @
Sulphur chloride (drums).....	.0674 @
Sulphur, flour Brooklyn brand (carloads).....	2.90 @
pure soft (carloads).....	2.90 @
superfine (carloads, factory).....	2.50 @

(See also Colors—Antimony)

WAXES.

Wax, beeswax, white.....	.68 @
ceresin, white.....	.16 @ .20
carnauba.....	.62 @
okerite, black.....	.60 @
green.....	.78 @ .80
montan.....	.35 @
substitute.....	.20 @ .32
paraffine, refined 118/120 m. p. (cases).....	.0094 @
123/125 m. p. (cases).....	.01 @
128/130 m. p. (cases).....	.1014 @

*Nominal.

THE MARKET FOR RUBBER SCRAP.

NEW YORK.

BUSINESS IN THE RUBBER SCRAP MARKET has been of the mild summer variety with the demand centered on boots and shoes and tires for rebuilding. England has removed the embargo on rubber scrap and earlier in the past month there was a movement of inner tubes for export but the volume was small. The low prices ruling in crude rubber and the consequent apathy of the reclaimers are sufficient reasons for the quiet conditions in the rubber scrap market.

Circular E, the new standard of packing adopted by the Scrap Rubber Division on June 17, is printed elsewhere in this issue.

BOOTS AND SHOES. Excepting a few unfilled orders from reclaimers, the market for boots and shoes has been practically at a standstill. Quotations are nominally 8 3/4 cents delivered.

TIRES. These grades have been without interest other than the call for picked tires. A fair demand from reclaimers was reported during the month, but the movement subsided later.

INNER TUBES. Nothing of interest to report on tubes. The export demand that was noted about the middle of the month has apparently been satisfied.

QUOTATIONS FOR CARLOAD LOTS DELIVERED.

JULY 26, 1919.

Prices subject to change without notice.

BOOTS AND SHOES:

Arctic tops.....	.14 @
Boots and shoes.....	.08 @
Trimmed arctic.....	.08 @
Untrimmed arctic.....	.08 @

HARD RUBBER:

Battery jars, black compound.....	.11 @
No. 1, bright fracture.....	.23 @

INNER TUBES:

No. 1, old packing.....	.19 @
No. 2.....	.10 @
Red.....	.10 @

MECHANICALS:

Black scrap mixed, No. 1.....	.03 @ .04
No. 2.....	.03 @ .04
Car springs.....	.06 @ .07
Hells.....	.03 @ .04
Horse shoe pads.....	.03 @ .04
Hoses, air brake.....	.04 @ .05
fire, cotton lined.....	.01 @ .02
Insulated wire stripping, from iron sheath.....	.01 @ .02
Mating.....	.03 @ .04
Reel packing.....	.05 @ .06
Roll scrap, No. 1.....	.05 @ .06
No. 2.....	.06 @ .07
White scrap, No. 1.....	.08 @ .11
No. 2.....	.10 @ .11

TIRES:

PNEUMATIC—

Auto packing, No. 1.....	.07 @ .08
No. 2.....	.05 @ .06
Bicycle.....	.03 @ .04
Standard white auto.....	.03 @ .04
Standard mixed auto.....	.04 @ .05
Striped, ungummed.....	.05 @ .06
White, G. & G. M. & W. and 11 S.....	.08 @

SOLID—

Carriage.....	.04 @ .05
Irony.....	.04 @ .05
Truck.....	.04 @ .05

*Nominal.



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TABLE OF CONTENTS ON LAST PAGE OF READING.**EUROPEAN ECONOMIC RECONSTRUCTION.**

THE EUROPEAN GOVERNMENTS have lost no time in taking up thoroughly and scientifically the question of economic reconstruction and are overlooking no opportunities to set on their feet the industries hardest hit by the war. Before the war was over the German Government had started active measures to protect its wholesale trade after the war and it has already determined to regulate that branch of commerce and industry pertaining to textile fibers, rubber and other articles. What this regulation will consist of is not exactly apparent at present, but it can safely be assumed it will be a supervision over the importation and distribution of the raw materials so that the Teutonic manufacturers will be in a position to compete on a basis of equality with those of other countries.

Despite the loathing for German methods bred by the war, it is apparent the world must trade with the German if for no other reason than to enable him to get the wherewithal to pay his bills for indemnity and reparation. Germany's financial situation is such that she must have credit in order to obtain the raw materials for the manufactured goods that will be sold back to the world

she tried to despoil. What security can be offered is problematical and remains to be seen. The prejudice against "made in Germany" is undoubtedly deep, natural and inevitable, but will probably prove to be not insurmountable, even in France and England, where it is stronger than it is here.

JAPANESE FOUNTAIN PENS—A FREE TRADE JOLT.

THE JAPANESE are now making fountain pens at a cost of 2 cents each and shipping them into this country, making their total cost with the Underwood tariff duty of 25 per cent added, 2½ cents apiece. If the thrifty retail dealer sells them at 50 cents each, he is making a very neat little return on his investment. But we have not seen any 50-cent fountain pens that we recall. Fountain pen manufacturers have seemed indifferent to the tariff duties that are collected upon foreign products and also to the general policy of protection. Skilled Japanese workmen are making articles of all kinds and receiving from 34 to 42 cents a day, about one-tenth of what American workmen receive. They are probably not as efficient as American workmen, and their products may not be as good, but they will be good enough to make a considerable dent in the sales of our goods, if the same ratio is preserved as that on fountain pens. If we find ourselves flooded with cheap goods of all kinds in the next few months, bearing the Nipponese stamp, our free trade friends may be kept busy explaining—to manufacturers, workmen and consumers.

FAKE RUBBER PROMOTER.

UNDER THE ALITERATIVE TITLE of "Pirates of Promotion," the "World's Work" has printed a list of the leading fake stock company promoters, together with a list of several hundred of the companies which they have floated in order to separate the American public from its hard-earned savings and Liberty Bonds. While oil and gold mining companies, of course, predominate, it cannot be overlooked that the list contains a large number of rubber concerns, plantation rubber companies, rubber substitutes companies and the like. The names of the promoters are some of them well known to the readers of the daily newspapers, generally in connection with a penitentiary sentence for use of the mails to defraud or violations of the Blue-Sky laws. In the preamble to this useful article the magazine states "that of all the oil produced in Oklahoma in 1917, the stock promoting companies had less than two-thousandths of one per cent. For every \$555 of capitalization only \$1 worth of oil was produced." Of the fourteen rubber concerns listed there are no figures as to the pounds of rubber or the value of the tires they have produced. It is perhaps gratifying to know that of all the hundreds of rubber and tire concerns there are in reality so few that are listed as fakes. The parting warning of the "World's Work" cannot be improved upon.

"As a parting word, we would say that the untrained investor should not depend on any list of pirates of promotion or on any law to protect him. His best protection is to know the methods of the pirates, and in actual investing to deal with houses of only the highest reputation. An ounce of investigation may save a ton of loss and worry. And the new investor should always remember that the only one who stands a chance of getting rich quick in the promotion game is the pirate of promotion."

STANDARD CATALOG SIZES.

OF INTEREST AND IMPORTANCE to the rubber manufacturing trade is the movement that has been started by the National Association of Purchasing Agents looking toward the establishment of a standard size of trade catalogs and invoice forms. Attention was called to the fact that after a careful investigation it was ascertained that catalogs in various lines of industries are made in 147 different sizes, running from 3 by 5 to 9½ by 13¼ inches. It was urged that a standardization of these publications was emphatically necessary as to size, compilation and mechanical production. The purchasing agents formally adopted the size 7½ by 10½ inches for the trimmed page as the national standard of half sizes saddle-stitched so that they will open flat for filing.

From the standpoint of the printer and publisher it is pointed out that the standard size would give artistic proportions, prevent waste of paper by cutting the pages from the standard stock sheet, save presswork by permitting the printing of 16 and 32-page forms, economize space in the storage of type in galley racks, and render it much easier for filing and indexing.

All these are important matters and worthy of consideration. But the standpoint of the rubber manufacturer should not be overlooked. Thousands of dollars are spent annually by the big firms in producing catalogs of their various lines of goods which are an artistic treat and a delight to the eye. The displays of rubber articles are arranged in the most attractive form that highly paid staffs of advertising experts can devise. That these catalogs pay for themselves over and over is apparent, or rubber manufacturers would have found it to their interest to discontinue them. In footwear, for example, the United States Rubber Co. has for years used a standard size of its own, 4¼ by 8½ inches, in its announcements of rubber boots and shoes. The Apsley Rubber Co. announces its outing line of footwear in a neat booklet 6½ by 3½ inches. The Hood Rubber Co. finds its goods are well displayed in catalogs 6 by 3½ inches. Catalogs of druggists' rubber goods, specialties, and fine clothing generally run to larger sizes, sometimes approaching the proportions of a magazine.

Would such a revolution in the printing of rubber trade catalogs be worth the expense involved and would it not be a step toward the dead level of standardization of all advertising which would make the publications of

rubber manufacturers resemble the catalog of a mail-order house? And would it not be a step toward the destruction of individuality in salesmanship if pushed to its logical conclusion?

Special price lists for purchasing agents, of a type that is most convenient, will probably be supplied, but it is to be hoped that they will not supersede the more interesting and artistic trade catalogs. Standardization and uniformity have their merits, but can easily be carried too far. Standardization of purchasing agents in appearance, accessibility, office equipment and uniform would be a godsend to rubber goods salesmen, yet, we doubt its adoption.

The movement recently instituted by this association to adopt standard forms for invoices, purchase orders, acknowledgments, and notices of shipments, has much to commend it and seems likely to meet with the approval of most progressive firms.

MAKING OVER DISABLED WORKMEN.

A MOVE IN THE RIGHT DIRECTION is that of The B. F. Goodrich Rubber Co., which long ago established a department for the rehabilitation of disabled workmen. The company has already succeeded in rendering most efficient aid to men injured in their own factories, by which they are assured of a good future by being taught to overcome their physical handicaps. Several men who have lost fingers, a hand or other members, which in the past would have absolutely incapacitated them for lucrative work, have been enabled to secure an education in other lines so that they are not only self-supporting, but in some instances are earning more money than they did before. The example of the Goodrich company is commended to other firms to follow, indeed is being followed by others, and with the return of the numerous soldiers injured in the war, the field of the rehabilitation department will be considerably broadened. In connection with the efforts the Government is making to assist its maimed soldiers, it can be made of the greatest benefit to the nation.

WOMEN WORKERS IN RUBBER.

HOW HAS THE RETURN of thousands of men from war service affected the thousands of women rubber workers who were employed primarily to meet war workers who were employed primarily to meet war emergency?

Some readjustments were inevitable, but indications point to the conclusion that women workers will be affected less seriously than casual thought might seem to indicate. Many women were employed who never worked before, and returned to the rôle of home-makers when their husbands, fathers and brothers returned from overseas. Many more, engaged in heavy work which they would not wish to follow through life, abandon it for lighter tasks yielding good compensation. Women are, however, employed more extensively in rubber mills than hitherto, and in more varied capacities, but on work requiring nimble fingers rather than strength.

German Ravages in the Rubber Factories of Northern France.

Special Correspondence

Just as soon as the armistice was signed a special correspondent of THE INDIA RUBBER WORLD was dispatched to the portions of the occupied territory in Northern France which were once rubber centers of importance. After much difficulty, owing to lack of transportation and housing, the story was secured and photographs taken. The record is of intense interest, not only historically but as bringing home to rubber manufacturers everywhere the losses suffered by a once prosperous portion of their own industry.

HOWEVER SYSTEMATIC AND IMPORTANT THE RAVAGES committed by the German armies in the rubber factories of Walloon and Flanders, they are nevertheless in no way to be compared with what the establishments situated in the north and northeast of France had to suffer—territories where the fighting was going on for nearly five years.

The ten departments invaded, where the firing line underwent ceaseless fluctuations during this long period, were those where the rubber industry was reaching an intense development, responding to the general need of the country as well as to the local demands of this district, the greatest industrial center in France.

In the departments invaded as early as August, 1914, and not evacuated until November, 1918, the Germans, anxious to destroy future competition from the first day of occupation, proceeded in the systematic destruction of the factories according to an elaborate plan laid out in advance, and of which the following are the details:

In February, 1916, the German General Staff instituted a thorough study of the French and Belgian industries in the occupied districts. It was a detailed inventory of more than 5,000 factories, for which 200 experts were specially recalled from the front. This report, which fell into French hands after the German defeat, covers the most important industrial branches, from a technical as well as from an economic point of view. It describes the conditions under which the various industries exist; it exposes their relations with Germany and with the markets of the world; it gives, furthermore, a summary of the repercussions that will probably result for Germany from the destruction of certain branches of these industries.

Rubber goods manufacture, like all other branches of industry, was examined from the following triple point of view:

- 1—Its position at the time of the invasion.
- 2—Its position resulting from the damages sustained, at the time of the investigation.
- 3—The profit that the German industry could derive from its disappearance and from the destruction of its factories.

The damages found by the German experts are divided into

two classes and are placed under the following headings:

- 1—Damages caused directly by the operations of war.
- 2—Damages resulting from the proceedings of the German authorities.

The report, in reality, constitutes an avowal of the thieves and destroyers themselves that the German campaign was, in the words of Premier Clémenceau, "a thorough and well-calculated conspiracy with the view of exterminating France industrially and commercially as well as militarily."

How the Germans inflicted damages upon the Belgian rubber industry aggregating one hundred million francs has already been recounted in detail in THE INDIA RUBBER WORLD OF JUNE 1, 1919.

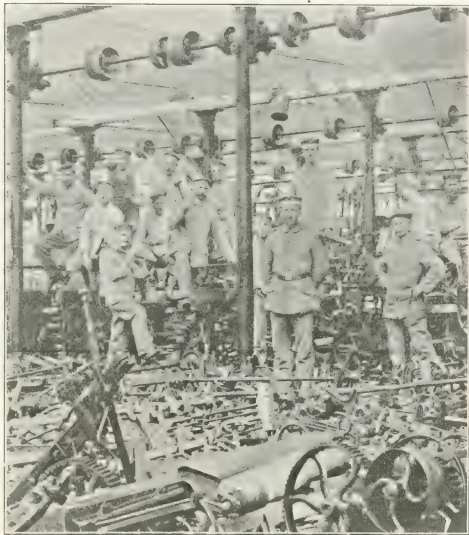
Eliminating the means of production by removing the machinery from the various factories, of both Belgium and Northern France, they assured themselves, in case of complete victory, of outlets where no one could compete against them.

The shameless theft of raw material from the factories enabled them to enlarge, without expense, their means of production. The carrying away of raw materials of all kinds, requisitioned or simply stolen, increased their stocks without any new expenditure and allowed them to decrease their cost prices.

In the regions which the on the ever-changing line of Halenbourg the ravages have been still more important. In the departments subjected to the caprices of the *Kommandaturs*, supplies and crude materials have disappeared, but, empty as they may be, none the less the factory buildings remain standing, and with energy can still be reequipped easily enough and set working, as was done in the case of the Englebert Works at Liège.

On the firing line it was altogether different, because, not only the supplies had disappeared, but also, as the accompanying photographs show, the buildings themselves, subjected to the attacks of shells of every caliber, have disappeared.

Of cities like Soissons, St. Quentin, Wailly, Lens, Ham, Albert, nothing is left; everything has been pulled down; and there are accumulations of bricks and burnt stones, which merely indicate the places where heretofore progressive cities and flourish-



POST-CARD SENT BY GERMAN SOLDIERS TO THE DIRECTOR OF A TIRE DUCK FACTORY AT BOUSSTÈRES, SHOWING THEIR WORK OF DESTRUCTION.

the industries could be found and from which thousands of people made their living.

Wherever the German has passed, even the grass no longer grows, and the very ground, poisoned by toxic gas, ploughed to



PRESS-ROOM AT SOISSONS.

the depths by mines and torpedoes, is as sterile as the dunes of Sahara. It is the country of the dead.

It is unfortunate that the world, and particularly, perhaps, the United States, knows so little about this; and one would never grow weary of repeating the story.

Numerous were the rubber factories erected in these devastated regions, which to-day find themselves stricken from the industrial list through the systematic destructions of the Germans. In the Aisne district the important Boinet Works, founded by Mr. Lefeburé, one of the oldest rubber men, who made a specialty of waterproof fabrics and gloves, has entirely disappeared, and nothing remains. The same is the case with the two rubber factory factories, that of Lefrant & Co., at Ham, and the one founded at Chauny by the well-known American engineer, Lufbery, a relative of the ace of the Lafayette Escadrille.

The two great Wolber factories at Wailly and Soissons, to which we will refer presently, have also disappeared, and those of Destrieux, at Pont Marcy, were partly destroyed. Others more fortunate have been only partly dismantled, but all those whose



BOILER-ROOM AT SOISSONS.

names follow have seen their machinery and raw material vanish; if, in some cases, the walls remain standing, all trace of industrial order has disappeared; the water pipes and smoke stacks have been smashed, the tall chimneys torn down, the foundations of the boiler settings and machinery dynamited.

Such is the case with the Bouchery Works at Croix, Bans à Lhowne, the very important factories of the Colonial Rubber Co. at Prouvy Thiant and those of the Société des Constructions Electriques du Nord et de l'Est, at Jeumont; with the Englebert factories at Givet, with Lefeburé at Pont Marcy, with Michel Jackson and La Royère at Halluin, La Couture at St. Quentin and with Butrullé and Masquelier, at Tournignier.

In the Lille and Roubaix regions the destructions have been less severe, but the supplies and raw materials have been just as carefully carried away and nothing remains but the empty buildings, which our victorious armies have retrieved. This was the lot of the Masuré establishments and the Coston factories at Roubaix, of the Place and Meurisse works at Lille and of that of Flament Frères at Solesmes.

It has not been possible until now to make up the balance sheet of the ravages committed by the Germans, which runs into millions and millions. An entire prosperous industry has been systematically ruined, and taking into consideration the immense material difficulties one has to contend with, such as shortage of labor, defective machines, scarcity of money and credit, one knows not how and when these terrible damages can ever be repaired.

Take the case of the Wolber factories, which were situated at Wailly and at Soissons. Among the French factories manufactur-



A PORTION OF THE WOLBER PLANT AT WAILLY.

ing pneumatics and inner tubes for bicycles and automobiles, they were considered among the most important and ranked with those of Michelin and Bergougnan. The area covered by the buildings exceeded 107,639 square feet; the surface of the boilers totaled 1,181 square feet; the motive force was 1,000 horse-power, the hydraulic force supplied by the river Aisne was the same. There were 60 vulcanizing presses in these factories, 25 mills, 8 autoclaves, 7 calenders, 7 spreading machines, and all the accessory equipment which 700 laborers would require—a large staff for France.

These factories were built scarcely fifteen years ago by Mr. Wolber, who was one of the pioneers of the pneumatic tire industry in France. There he had set up model workshops to enlarge his factory at Levallois, established in 1918, and which had become too small for its requirements. From 48,000 tires in the beginning, Levallois, in 1902, had succeeded in turning out 102,000, but could not produce more. The energetic manufacturer was delighted in the possession of this new and potential plant, which reflected the success of its products, and at that time was an evolution in the tire industry.

Under the active direction of Mr. Wolber the factories at Wailly and Soissons, previously described, progressed steadily each year. Building after building was added, new products were manufactured, and as a result the production exceeded 720,000 tires and as many inner tubes at the end of 1913. During

those years Wailly had been literally transformed. Light and airy houses had been built, providing homes for the specialists and workmen, and close by, at Mitry, in the smiling valley of Carreuux, Mr. Wolber had installed his private residence, surrounded by a beautiful park.

Very soon it was evident that Wailly was too small for the development of the Wolber factories, and in 1913 Mr. Wolber, foreseeing new manufactures, erected a factory of the most modern construction at Soissons. This was opened three months before the declaration of war.

At that time 900,000 tires and 900,000 inner tubes were being produced, and the new equipment made possible an annual production of up to 1,500,000 pneumatic tires and tubes. The war put a complete stop to the production of this important plant which the battle was destined to destroy.

It is a sad experience for one who wishes to ascertain the devastation wrought, as the correspondent of THE INDIA RUBBER WORLD has done!

A cruel journey along the Chemin des Dames, tragic and glorious, where they silently salute the heroic dead whose graves cover the Plateau de Craonne; a painful trip under the May sun; Soissons martyred, the city dead. What can we say about Wailly? The Wolber factories were its pride! Where are they?



ENGINE-ROOM AT WAILLY.

Destroyed from top to bottom, the fire, the shells, have twisted, smashed down, demolished everything.

At this distressing sight, this inextricable confusion, one forgets the material value of things and feels hatred boil within when thinking of this which was the center of work, this first-class factory with a big future and great promise, stopped when in full swing.

What remains of it all? Nothing, or nearly nothing.

Iron braces twisted and threatening! One can scarcely distinguish the long truss of the spreading room, nor the one for the construction of tire carcasses, nor that for inner tubes; their roofs blown off, riddled with shell holes, overthrown by bombs. All this is beyond words.

Let us leave Wailly in ruins, or rather that which once was Wailly, and go back to Soissons.

The Wolber factory has been cruelly damaged, but having been built after the American fashion of steel and reinforced concrete, it was better able to resist and still preserves the form of a building. The main structure has been hastily repaired and shelters at the present time an automobile park in the rear. The restoration of the building under the energetic supervision of Mr. Wolber, who wishes to work even in the midst of the ruins, is actually almost completed. The chimneys are torn down, the water system has disappeared, the buildings without roof or windows are riddled with bullets or shell splinters—these are only

injuries to material things, doubtless less painful than those done to human beings, but they will take as long to heal.

Returning by the broken road, looking at these distressing sights for a long time, we ask ourselves these questions:



THE WOLBER MANSION AT MITRY.

"What will the man do who has experienced such a disaster; who has seen go to pieces a business which it has taken him 30 years to build up?

"At the age of 50 is he going to leave things in the state of awaiting imminent but slow reparation? Hasn't this pioneer's energy become dull as the result of these undeserved misfortunes?"

Then we do not know Wolber! Crushed, but courageous, he has already set to work, aided by his son and son-in-law, by those among his associates who escaped the terrible war. While the war was going on, he erected a new factory at Lavallois, where he manufactured balloon fabrics, and there he has just started the manufacture of tires.

The plans for the reconstruction of Wailly and Soissons are finished and the works of restoration are beginning. New equipment, an improvement on the old, has been ordered and, as soon as received, will be installed and set going. New methods, such as the use of accelerators which the war has made known, will be employed.



PRESS-ROOM AT SOISSONS.

Wolber, always anxious to progress, does not want his regenerated factories to lack any improvement, and that is why he is sending his son, only just demobilized, to make a tour of investigation in the United States, where the rubber industry has reached its perfection.

This is one of the examples among thousands, of the energy with which France has endured the hard trials of the war, and



PNEUMATIC TUBE DEPARTMENT AT WAILLY.

of the efforts which have been made to rebuild an industry which the Germans believed they had killed.

RUBBER IN UNITED STATES COMMERCE.

NOTICEABLE EFFECTS of after-war readjustments are to be perceived in the official statistics of rubber imports and exports for the fiscal year ended June 30, 1919. The year's crude rubber imports were 402,471,531 pounds, value \$157,928,132; for the preceding year the imports were 389,599,015 pounds, value \$202,800,392; the increase in weight was 12,872,516 but the value fell off greatly, \$44,872,200.

In spite of the efforts of governments and planters' associations in the Far East and in Brazil to restrict exportation, the price went down. Much the greater part of the crude rubber (almost wholly plantation) comes from the Far East; the importation from the British East Indies, 272,119,890 pounds, is the largest on record, nearly 14,000,000 pounds more than last year, though it brought in \$30,000,000 less, while that from the Dutch East Indies, 39,467,761 pounds valued at only \$15,411,620, still falls far behind the record of 1917, 53,663,857 pounds. It seems clear that it is the demand of the United States that has influenced the direction taken by the Eastern product, rather than the fear of submarines.

The Brazilian contribution, 46,407,924 pounds, though an improvement on last year's 41,277,914 pounds, is still behind the 1917 record of 56,818,966 pounds; the price paid for it, \$14,744,409, shows less falling off than in the case of plantation rubber.

There was a marked falling off in the importation of allied rubbers and gums. Of balata 1,238,852 pounds, value \$593,633, was imported as against 2,449,881 pounds, value \$1,278,610, last year and 3,287,445 pounds in 1917. Of jelutong (Pontianak) the imports, free of duty, were 11,363,283 pounds, value \$1,199,216, while in 1917, when a duty was imposed, 23,376,389 pounds worth \$1,044,422 came in. On the other hand, gutta percha to the amount of 4,151,085 pounds and the value of \$710,510 was imported as compared with 1,151,312 pounds worth \$147,323 last year, while substitutes for rubber to the extent of 2,159,716 pounds, value \$301,479, came into the country; only the value for previous years is given, is \$136,438 in 1918 and \$39,813 in 1917. The importations of guayule fell off to 2,990,253 pounds, value \$761,060, from the 4,307,539 pounds worth \$1,341,095 in 1918.

Rubber scrap importations dropped again, being only 8,483,383 pounds as compared with 13,980,303 pounds in 1918 and 20,517,328 pounds in 1917.

The total imports of india rubber, gutta percha and allied gums were 422,414,904 pounds, value \$161,192,551, for the year; in 1918 the imports were 414,983,610 pounds, value \$206,542,236, and in 1917 they were 405,431,069 pounds, value \$194,688,303.

The value of exports of manufactured rubber goods for the year ending June 30, 1919, amounted to \$43,856,588 against \$33,343,181 in 1918 and \$31,105,075 in 1917; the increase over last year was \$10,511,407, rubber thus doing its share toward the phenomenal increase in American exports for 1919. For the month of June alone the exports were \$5,727,642 as compared with \$3,192,528 in 1918, an increase of \$2,535,114.

The value of automobile tires rose to \$22,630,200 from the \$13,977,671 of 1918, an increase of \$8,652,529. Exports to France jumped up to \$3,227,830 from the \$661,648 of 1918, which in turn had been a large increase from the \$425,322 of 1917. For the Latin-American countries the increase was also marked. Cuba took \$2,009,263 of tires compared with \$1,336,233 in 1918; Argentina, \$1,837,884 compared with \$1,649,840 of the year before; Mexico rose to \$1,001,233 in 1919 instead of \$777,984 in 1918 and Brazil to \$667,319 instead of \$455,102, while Chile took \$1,130,873 of American automobile tires, there being no official figures for the two years previous, as Chile was included in "other countries." Altogether Latin-America bought \$6,646,572 worth of automobile tires as compared with \$4,219,159 in 1918, and \$3,217,548 in 1917, an increase of \$2,427,413, the value of exports being over 50 per cent more than last year and more than double that of two years ago.

Exports to British possessions held their own, in spite of the strong British exertions to favor their own goods and to restrain American manufacturers, except in the case of Canada. For the United Kingdom itself the exports were \$832,492 as against \$618,071 last year; for Australia and New Zealand the figures were \$880,118 and \$884,503 against \$819,755 and \$946,804, respectively, in 1918. British India took \$478,556 as against \$416,411 in 1918 and British South Africa took \$620,732 as against \$693,065. For Canada, on the other hand, there was a drop from the \$1,776,518 of 1918 to only \$961,532. To great Britain, therefore, and her chief colonies and possessions, automobile tires made in the United States were exported in 1919 to the value of \$4,628,053, which, compared with the \$5,270,624 of 1918, shows a falling off of \$642,571; the falling off in Canada more than accounts for this.

The export of tires to the Philippines was \$1,412,929 as compared with \$863,727 in 1918; to the Dutch East Indies \$812,425 worth were sent in 1919 against \$347,912 in 1918, while "other countries" account for \$5,903,180 in 1919 as compared with \$2,530,337 in 1918 and \$1,591,623 in 1917.

Exports of belting, hose, and packing again increased very largely over those of the previous year, the figures being \$5,716,016 for 1919 as against \$4,578,396 in 1918 and \$3,532,384 in 1917, the million-dollar increase of 1918 being repeated and better in 1919. The rubber boot export which had risen to \$4,861,213 in 1918, dropped to \$1,607,412 in 1919, while rubber shoes rose to \$2,559,641 in 1919 from the \$913,128 of 1918; the decrease in this class of goods over last year is, therefore, \$1,508,288. The exports of insulated wire cables for the year ending June 30, 1919, amounted to \$8,683,304 worth, as compared with \$5,716,275 for 1918 and \$7,192,204 for 1917.

"ARE YOU EMPLOYING A DISABLED MAN?"

The Dunlop Rubber Co., Limited, Birmingham, England, is featuring this pertinent question at the bottom of its page advertisement in British trade journals.

THE DEPARTMENT OF COMMERCE gives NOTICE THAT hereafter its annual tables will be for the calendar year, instead of the fiscal year ended June 30, as heretofore.

Peace Problems and Progress.

RUBBER MEN JOIN FARM COOPERATION MOVEMENT.

INDUSTRIAL LEADERS of New England, including men prominent in the rubber business, have recently organized the New England Farm and Food Foundation for the purpose of forcing down the cost of living by establishing closer cooperation between the farmer and the consumer.

The waste of food products under present systems, congestion of certain products in one market while other centers are suffering from a scarcity of the same article, and hoarding by profiteers are the particular evils upon which the foundation will center its efforts.

Cooperative buying will be introduced, and the foundation will assist such bodies as already exist along similar lines which in the past have been handicapped by lack of finances.

Farmers will be assisted in obtaining credit and other facilities; in organizing farmers' exchanges and other agencies, and in grading and standardizing the products of the farm. Young men will also be helped in obtaining an agricultural education.

The list of trustees of the foundation looks like a "Blue Book" of New England business leaders and includes M. M. Converse, president of the Converse Rubber Shoe Co., Malden, Massachusetts; Harry G. Fisk, treasurer of The Fisk Rubber Co., Chicopee Falls, Massachusetts; and Frederick C. Hood, treasurer of the Hood Rubber Co., Watertown, Mass.

AMERICAN CREDIT FOR EUROPEAN REHABILITATION.

In an article in the August issue of "Commerce Monthly," James S. Alexander, president of the National Bank of Commerce in New York, a director of the United States Rubber Co., and a member of the recently organized committee of bankers formed to work out ways and means to refinance Europe, clearly outlines the part which America must play in the rehabilitation overseas.

Stated in broad terms, the situation is, that Europe must have from the United States immense quantities of materials to rebuild and refit for a normally productive economic life. Europe's international banking situation is such that she cannot pay as she goes. Neither is her present productivity such as to enable her to pay for what she buys with what she produces. As a nation, therefore, we must both sell goods to Europe and supply her with the credit to make these purchases. This should be done, not with Government funds, but with private capital organized and administered on a semi-public basis with the approval of the United States Government so as to inspire the widespread confidence and participation of the investing public in the necessary bonds or debentures, each of which should be secured by the pool of everything collateral that Europe is able to offer.

From the selfish point of view of American interest as well as of that of humanity this is necessary in order to conserve our markets, to conserve our surplus, and to avert possible industrial depression. Moreover, the total market for the United States, in respect to all nations and all commodities, should be allocated for the common good, thus giving equal opportunity to strong and financially weak European nations and to large and small American firms during the reconstruction period.

A pool of Europe's needs can be met by a pool of America's resources through the agency of a great, centralized credit organization of banker's groups with adequate capital and the confidence and support of American business.

SAVINGS STAMPS IN LARGE DENOMINATIONS.

Thrifty Americans can now buy their Savings Stamps in denominations of \$100 and \$1,000. The new registered Treasury Savings Certificates are exactly the same security, on exactly the same basis with the same exemptions from taxation, and sold on exactly the same terms as the War Savings Stamps which

have become the popular investment of the small saver. Moreover, War Savings Stamps are now convertible into Treasury Savings Certificates.

The price of the new certificates is relatively the same as that of War Savings Stamps. The \$100 certificate was sold for a \$82.40 in January and the price increases 20 cents each month to December, 1919. The \$1,000 certificate sold for \$824 in January and the price increases \$20 each month until December. Treasury Certificates of this year's issue reach maturity January 1, 1924. Prior to that date they can be redeemed on ten days' notice for the cost plus 3 per cent interest.

STEEL TIRES ON SURRENDERED GERMAN TRUCKS.

For the benefit of the Government and the United States motor truck industry there is to be a research investigation of the 47 German trucks recently brought to the United States. It will be conducted under the joint auspices of the Society of Automotive Engineers, the National Automobile Chamber of Commerce, the Motor and Accessory Manufacturers' Association and the Motor Transport Corps of the Army. These trucks were selected from the 1250 turned over by Germany to the United States under the terms of the Armistice. They represent the best available samples of current German practice in truck construction and their study seems likely to prove of value. That most of them are fitted with steel tires again emphasizes the lack of rubber in Germany.

PROPOSED TARIFFS AFFECTING THE RUBBER TRADE.

Among the bills which have been introduced in Congress, and which are now before the Ways and Means Committee for consideration, are several tariff bills which are of interest to the rubber industry. These include bills providing for a tariff of 15 cents per unit (= 1 per cent) of sulphur in the short ton (2,000 pounds) of pyrite and all crude iron sulphide minerals, and on sulphur in whatever form not otherwise provided for, the same tariff per unit of sulphur content; on crude or manufactured barytes, \$10 per ton; barium sulphate, \$15 per ton, and on barium carbonate, binoxide, chloride and other barium compounds, \$20 per ton. On magnesite commercial ore, crushed or ground, 1/2-cent a pound; calcined, dead burned and grain, 3/4-cent a pound; magnesite brick, 3/4-cent per pound and 10 per cent ad valorem; on zinc in blocks, bricks or zinc dust, 1 1/2 cents per pound; in sheets, 1 3/4 cents per pound; sheets coated with nickel or other metal or solutions, 1 3/4 cents per pound, and worn-out zinc for remanufacture, 1 cent per pound. Zinc oxide and white pigment containing zinc, but no lead, if grained in oil, 1 3/4 cents per pound; zinc sulphide, 1 1/4 cents per pound; zinc chloride and sulphate, 1 cent per pound.

Coal-tar products to be divided into three groups: Group 1, free of duty; Group 2, a tariff of 40 per cent and 6 cents a pound, and Group 3, a duty of 45 per cent and 7 cents a pound.

Among the tariff bills already passed by the House, and now before the Senate, may be mentioned one placing a duty of 60 per cent ad valorem on glass and porcelain ware for laboratory purposes. Another places 45 per cent duty on philosophical, scientific, and laboratory instruments and appliances.

THE FEDERAL TRADE COMMISSION ON FOOTWEAR PRICES.

After a comprehensive and thorough investigation, the Federal Trade Commission has found that the high prices of shoes cannot be justified by underlying economic conditions. Packers, tanners, shoe manufacturers and retailers are all said to be taking excessive profits, all of which impose an intolerable burden upon the consumer. Few tanners, for example, who were content to earn 10 per cent on their invested capital in 1914 were found to average less than 20 per cent since 1916 or 1917,

and it is claimed that the profits of all other branches of the leather shoe industry show similar increases during and since the war. Suggestions to remedy the situation include rigid enforcement of the laws against monopolistic control of commodities, legislation forbidding producers of hides to engage in the tanning business, and the adoption of a scheme to acquaint the consumer with the manufacturer's selling price.

It is a significant and gratifying fact that in this arraignment the Federal Trade Commission has found it unnecessary to allude to footwear of any sort that is made in rubber mills. Rubber and fabric shoes with fibre soles and rubber heels were brought to a high degree of appearance, comfort and wearing quality at exactly the right time to be of great service to the public in combating the rising cost of living. For summer wear they solved the problem, and to the fact that selling prices have been kept as close to relatively low manufacturing costs as is consistent with a fair margin of profit may be attributed in large measure the success which has attended fibre-soled fabric shoes since their introduction only a few years ago.

GOVERNMENT RAW MATERIALS AND CHEMICALS FOR SALE.

The War Department, through the Director of Sales, announces the surplus stocks of materials, which will be offered for sale from time to time, generally under sealed proposals. The Raw Material and Scrap Section of the office of the Director of Sales, Munitions Building, Washington, District of Columbia, will furnish information concerning any of the materials listed as on hand July 10 in the schedule recently published.

This list includes 582 tons of rubber, 4,004 feet of rubber belting and 11,565 feet of rubber hose. Of metals and chemicals more or less in demand in the rubber industry may be mentioned: acetone, 56,748 pounds; acid, nitric, 42 per cent, 14,015,451 pounds; acid, hydrochloric, 20 per cent, 511,790 pounds; aluminum sulphate, commercial purity, 2,790 pounds; aluminum sulphate, 17 per cent, 13,600 pounds; carbon bisulphide, 2,000 gallons; carbon tetrachloride, 99 per cent pure, 10,500 pounds; glycerine, 100 pounds; lampblack, dry, 28 tons; lime, 48,163 pounds; nitre cake, 36,000 pounds; rosin, 125 tons; sulphur chloride, 2,619 tons; turpentine, crude, 9,670 gallons; zinc, 40,003 tons; zinc, sheet, 13 tons.

Besides these there are listed 109 tons of burlap, and 302,266 grommets, also 208 tons of grommets.

RUBBER AND ALLIED PROPERTIES SOLD BY THE ALIEN PROPERTY CUSTODIAN.

Definite official information has been received from the Alien Property Custodian regarding the disposal of the property of firms that are of interest to the rubber trade. Final disposal has been made in two cases:

Merck & Co.—Eight thousand shares of the stock of this company were offered for sale on May 9, 1919, for which the McKenna Corporation, of 60 Wall Street, New York City, bid the sum of \$3,750,000. This bid has been approved and the transaction closed.

Robert Soltau & Co.—Eight hundred fifty shares of the stock of this company were offered for sale on May 21, 1919, for which the Bishop Gutta Percha Co., 420 East 25th Street, New York City, bid the sum of \$208,000. This bid has been approved and the transaction closed.

In three other cases the property has been sold but the necessary formalities were not yet completed on August 14:

Schaeffer & Budenberg Manufacturing Co.—One thousand twenty shares of the stock were offered for sale on June 12, 1919, for which R. B. Phillips, of the American Steam Guage & Valve Manufacturing Co., Boston, Massachusetts, bid the sum of \$476,000. This bid has been approved, but final settlement has not yet been completed.

Polack Tyre & Rubber Co.—Two thousand ten shares of the stock of this company were offered for sale on June 17,

1919, for which Joseph Kaufman, 303 Jay Street, Brooklyn, New York, bid the sum of \$8,500. This bid has been approved, but final settlement has not yet been effected.

Roessler & Hasslacher Chemical Co.—Six thousand eighteen shares of the stock of this company were offered for sale on July 18, 1919, for which Coffin & Co., of 34 Pine Street, New York City, and the American Aniline Products, Inc., of 80 Fifth Avenue, New York City, bid the sum of \$3,039,090. As yet no action has been taken on this sale.

INTERESTING LETTERS FROM OUR READERS. RUBBER LEATHER.

TO THE EDITOR OF THE INDIA RUBBER WORLD:

DEAR SIR—There is a rather interesting comparison of prices to be made which might influence our big rubber manufacturers to a new field of endeavor, and I call attention to the following:

Hemlock sole leather.....	\$6.50 per pound
Upper new Para rubber.....	5 per pound
Ribbed smoked sheets rubber.....	41 per pound

Perhaps my idea is a bit premature, but, nevertheless, I have the very definite belief that rubber manufacturers can produce leather substitute shoes in competition with the regular footwear, and with considerable profit to themselves.

The following are facts that are indisputable as regards rubber manufacture and footwear:

1. Machinery has already been developed for the production of footwear made of canvas, rubber and leather. Very little need be added to complete the necessary machinery for turning out a real shoe.

2. Rubber manufacturers are already producing, first, (A), sole "leather" and secondly, (B), "leather" for all sorts of hand baggage.

(A) The first is a stiff firm leather substitute that has already taken the place of real leather and has proved itself, in many ways, more advantageous.

(B) The second "leather" is a soft compound that would seem, by all appearances, to be an excellent substitute for shoe "uppers." It is durable, soft and pliable, and, in appearance, equals the best quality of leather.

3. Here then, already exist the two necessary materials for making a shoe. No doubt, the quality can be improved by further experimentation and compounding of rubber, balata, etc. Canvas interlining would lend a strength that leather could never have.

4. All the colors and shades of leather can easily be reproduced.

5. It is not even unlikely that many parts of the shoe can be molded, thereby saving a considerable labor expense that is impossible with leather.

Considering the above, do you not agree that, with a trifle of added experimentation, there is a very large new field of production open to the rubber manufacturer? With the price of shoes to-day, and considering the low cost of rubber by comparison, it would seem a most opportune time to start this new enterprise.

It might be said that the price of rubber, though low to-day, may advance beyond a point where shoe production would be profitable. But I do not believe that this need be a factor, and I base my belief, first, on the fact that rubber-tree growth is being increased yearly, and, secondly, leather production has reached its maximum if it is not already on the wane. Cattle require grazing land, and this is gradually being absorbed into farm land. Rubber-tree acreage, however, is not made otherwise useless because of the trees, but can also be profitably planted with other useful flora between the trees. There is every reason to believe that, in time, a substitute must be found for leather, and the best material for the purpose would seem to be rubber.

The idea has made me rather enthusiastic, and I hope that some manufacturer will find it equally practicable.

Sincerely yours,

New York City.

ALFRED C. EGGERS.

Crude Rubber Prices.¹

By Isador Lubin.

THE CRUDE RUBBER PRICE SITUATION.

OF ALL THE RAW MATERIALS consumed by modern industry, crude rubber is perhaps the only important staple which has not experienced an increase in price during the period of the war; and this, in spite of the fact that the world's rubber consumption had increased from 101,000 tons in 1913 to approximately 230,000 tons in 1917. (See Table I.) During these five years the consumption of the United States rose from about 50,000 tons to 175,000 tons,² or in other words, from 50 to

TABLE I.—THE CONSUMPTION OF CRUDE RUBBER.³
[Long tons.]

	United States	Great Britain	France	Germany	Italy	Total
1919	175,000	20,455	3,799	13,775	5,091	85,440
1918	158,475	17,736	3,755	15,281	5,691	78,581
1917	152,064	18,724	4,053	15,643	5,872	95,836
1916	135,179	25,276	6,000	15,500	21,000	101,455
1915	121,251	18,549	5,600	11,000	10,611	99,800
1914	96,792	15,072	10,271	6,000	6,350	135,214
1913	116,477	15,200	1,685	3,000	5,552	169,474
1912	177,585	25,938	174	2,900	1,946	239,017

70 per cent of the world's total consumption. This was almost 50 per cent more than we used in 1916, twice as much as in 1915, and approximately three times as much as in 1914. In the same period France had increased her consumption some 10,000 tons;

while Italy in 1917 took 5,000 tons more crude rubber than in 1913.

How is the falling of prices during the past six years compatible with this vastly expanded consumption? The reply can be found only in an analysis of the situation in Germany and Russia and in the figures of the world's rubber production.

While the consuming countries of the world were taking increasing amounts of crude rubber, the plantations of the Far East were coming into a "bearing" condition. Production was keeping abreast of consumption, and even though the amount of crude rubber going into the manufacture of rubber products during this period increased 127 per cent, the world's production had grown by 147 per cent. (See Table II.) Thus, in spite of the unprecedented rise in consumption, a surplus of 20 per cent was created.

Prior to the outbreak of the war among the world's consumers of crude rubber. Indeed, she led the world in the manufacture of rubber toys, hard-rubber goods,

ocean cables, and rubber packings. Germany in 1913 imported as many as 15,500 tons of crude rubber, which comprised about 15 per cent of the world's production for that year. Shortly after the outbreak of hostilities rubber was declared contraband by England, and all possible pressure was exerted to prevent Germany from receiving any of this material. So stringent was the embargo of the Allies that the German imports were cut to 2,000 tons in 1917, and it is estimated that this amount had been further decreased in 1918 to less than 1,000 tons.

Russia in former years was also an important consumer of crude rubber. In 1916 her imports amounted to over 20,000 tons.⁴ The past two years, however, have witnessed a radical decline in Russian consumption—the result, no doubt, of economic disorders. In 1918 her imports were less than 2,000 tons.⁵

Had the consumption of Germany and Russia continued even at the pre-war rate, a rubber surplus would not, in all probability, have existed, and the trend of rubber prices would no doubt have been different.

The surplus of crude rubber, it should be borne in mind, was due entirely to the increased output of the plantations, which grew from 47,618 tons in 1913 to 204,000 in 1917. The production of Brazil remained relatively static in the interim, and that of other parts of the world decreased by some 43 per cent. Until 1913 Brazil had led the world in the output of crude rubber, but since then the production of the plantations has increased by leaps and bounds, until in 1917 it was five times that of Brazil. (See Fig. 1.)

TABLE II.—THE WORLD PRODUCTION OF CRUDE RUBBER.⁶

		Plantations	Brazil	Other grades	Total	Percentage of increase or decrease
1900	4	6,750	27,136	53,890	87,776	—
1901	5	30,300	24,545	54,850	109,695	1.7
1902	8	28,700	23,632	52,340	104,672	4.5
1903	21	31,100	24,829	55,950	111,879	6.8
1904	14	30,000	25,077	62,120	117,197	11.0
1905	145	27,000	26,145	62,145	115,290	6.0
1906	310	36,000	29,700	66,210	131,920	6.5
1907	1,000	38,000	30,000	69,000	137,000	4.2
1908	1,800	39,000	24,600	65,400	129,000	-5.2
1909	3,600	42,000	24,000	69,600	139,200	6.4
1910	8,200	40,800	21,500	70,500	141,000	1.2
1911	14,419	37,730	23,600	75,149	150,900	6.5
1912	28,518	42,410	28,000	98,928	199,856	31.6
1913	47,618	39,570	21,452	108,640	209,640	9.6
1914	71,380	32,000	12,900	120,380	236,660	11.6
1915	107,867	17,420	13,615	158,702	319,604	31.8
1916	152,650	36,500	12,448	201,598	370,696	27.4
1917	204,348	39,370	13,258	256,976	483,972	27.4
1918 (estimated)	240,000	38,000	12,000	290,000	570,000	12.8

THE RUBBER MARKET DURING THE WAR.

Although the price of crude rubber tended downward during the past six years, several instances, nevertheless, of temporary rises were experienced. Neither of the two leading types of

¹ From Price Bulletin No. 1, issued by the War Industries Board under the direction of Wesley C. Mitchell.

² This figure varies slightly from that given in Table I (see THE INDIA RUBBER WORLD, AUGUST 1, 1919, page 644), where the 1917 consumption of the United States is given as 157,000 tons. This discrepancy is to be explained by the difference which exists in the compilations of the United States Bureau of Foreign and Domestic Commerce as compared with those of the Rubber Association of America. The latter organization differentiates between the various types of rubber imported, and for purposes of weighing it was necessary to use their figures as given in the above-mentioned table. The figures of the Bureau of Foreign and Domestic Commerce represent all crude india rubber and are used in Table I of this article.

³ This includes all the important consuming countries of the world, with the exception of Russia, Germany, and Australia, the total consumption of which decreased from 25,000 tons in 1916 to 7,000 tons in 1918. Data from Memorandum on the Rubber Industry, op. cit., page 7.

⁴ THE INDIA RUBBER WORLD, March, 1919, page 333.

⁵ See footnote No. 3, above.

⁶ Data from COMMERCE BULLETIN No. 1, SERIES VIII, DEPARTMENT OF PLANNING AND STATISTICS, War Industries Board.

FIGURE 1.—THE WORLD'S RUBBER PRODUCTION, 1910-1918.

Prior to the outbreak of the war among the world's consumers of crude rubber. Indeed, she led the world in the manufacture of rubber toys, hard-rubber goods,

TABLE III.—WHOLESALE PRICES OF CRUDE RUBBER AND RUBBER SUBSTITUTES, BY MONTHS, QUARTERS, AND YEARS, 1913-1918.

[illegible]

^a Prices from private firm, 1913 to 1917; 1918 prices from THE INDIA RUBBER WORLD. ^b Prices from THE INDIA RUBBER WORLD. ^c Prices from "New York Journal of Commerce," No. 1000, quoted; interpolated.

rubber, however, underwent any sustained rise or fall from the prewar level which was in any way comparable to that prevalent

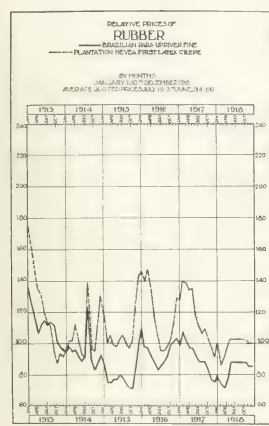


FIGURE 2—RELATIVE PRICES OF RUBBER: BEAT-1913, PARÁ UPRIEVER FINE, PLANTATION FIRST LATEX CREPE. BY MONTHS, JANUARY, 1913, TO DECEMBER, 1918. (BASE OF INDEXED PRICES, JULY, 1913, 100; JUNE, 1914=100.)

lowest prices ever experienced in the history of the industry. Its effect upon the price level in the years following is made evident in Figure 2. Here it will be noted that while the price of both types of rubber declined in 1913 in a more or less uniform manner, after that time the Pará variety remained slightly below and the plantation slightly above the 1913-14 market level.

This phenomenon is entirely the result of the abnormal decline of plantation prices in 1913 and shows the effect of this price fall on the pre-war level which is the base to which the war prices have been reduced.

The low level of crude rubber prices running throughout the period of the war was broken by important increases but twice—one rise reaching its peak at the end of 1915, and the other early in 1917. Crude rubber prices, like all others, of course, felt the effects of panicky conditions following the outbreak of the European war in August, 1914. With the resumption of activities in September, however, rubber prices returned to their normal level. Both rises mentioned above were common to all types of rubber and may be accounted for by more or less like reasons. Plantation rubber, however, also experienced a temporary increase in December, 1914. This was the result of the British embargo on shipments to this country. In October, 1914, Great Britain decreed that no shipments from her plantations in the Far East should be made to any port other than London. A

among other commodities. (See Fig. 2.) And in no case did rubber prices reach the level of early 1913.

The two important types of rubber—plantation first latex crepe and Pará upriever fine—declined sharply in price during 1913, the former experiencing a decrease of over 50 per cent during the first 10 months of the year.⁷ This was due to the large output of plantation rubber,⁸ which in 1913 was almost 20,000 tons larger than in any previous year.⁹

The abnormal decline in the price of the plantation variety brought rubber values down to the

supplemental decree in November prohibited all exports of crude rubber from any English port whatever. The announcement of this action, and the realization that its enforcement would cut the normal supply of the United States by approximately one-half, sent up some 30 per cent the price of what little rubber there was on the American market. This rise was short-lived, however, and the removal in January, 1917, of the embargo on shipments to the United States under a system of guaranties, brought plantation prices back to normal.

The first general rubber price rise was occasioned by the abnormal demand following the closing of the Suez and Panama Canals and by submarine activity in the Mediterranean. It was expected that the closing of these water routes would shut off supplies from the Far East, and the trade both in London and New York immediately proceeded to buy up whatever supplies were available. The rise early in 1917 was also purely speculative in character and may likewise be attributed to submarine activities.

An important factor which tended to keep rubber prices down during 1918 was the character of the import regulations of the War Trade Board. Rubber was one of the first commodities the import of which was licensed. This was due to the fact that there was great need for rubber by the Central Powers. On December 7, 1917, the War Trade Board issued regulations which provided for the licensing of imports, for the consigning of all imported rubber to the Rubber Association of America, and for the submission of guaranties by importers and manufacturers that they would not sell any rubber, directly or indirectly, to any country at war with the United States, or to any person, unless satisfied that there was no intention of exporting without an export license.

No restriction was placed on the amount of rubber that could be imported until May 8, 1918. The acuteness of the shipping situation then necessitated the reduction of the amount imported to the essential needs of the country. Accordingly, on May 8 the War Trade Board, after conferences with representatives of the rubber industry and the United States Shipping Board, restricted the quantity of rubber to be licensed for import during the three-month period, May, June, and July, to 25,000 long tons, which is at the rate of 100,000 long tons per year, or about two-thirds of the 1917 importations. Subsequently the War Trade Board virtually increased the amount to be licensed for import to 28,000 long tons (green basis) per quarter by ruling that the Brazilian imports should be allocated on a dry basis which allowed approximately 12 per cent for water content.

TABLE IV.—VIRGIN AND RECLAIMED RUBBER REQUIRED FOR THE MANUFACTURE OF RUBBER GOODS.

	Pounds	
	Virgin.	Reclaimed.
Army requirements:		
For tires and tubes—		
Motor vehicles	33,965,167	8,657,434
Airplanes	31,236	26,198
For other articles—	(10)	(11)
Aircraft production		
Chemical warfare—		
Gas defense	2,308,000	102,000
Other defense	(12)	(13)
Construction Division	529,587	1,054,609
Edgewood Arsenal	(14)	(15)
Electric	92,300	49,408
Medical	906,383	477,209
Ordinance	(16)	(17)
Other	57,919	96,531
Quartermaster	9,172,579	3,575,683
Signal Corps	9,123,463	2,701,981
United States Government explosives plants	(18)	(19)
Total Army requirements	58,674,478	15,765,790
Other requirements:		
Navy	2,846,000	214,000
Total requirements	61,520,478	15,979,790

¹⁰ See Signal Corps, and Tires and Tubes.

¹¹ Negligible.

¹² Other Government requirements, that is, the Railroad Administration and the Emergency Fleet Corporation, together with the requirements of Allied nations for war purposes, are estimated to have brought the total monthly war requirements up to 3,150 per month.

⁷ The January, 1913, price of \$1.10 may appear high when compared with the present price of crude rubber. But when it is remembered that rubber in May, 1911, only 19 months earlier, sold for as high as \$2.85, the story of rubber prices becomes even more interesting.

⁸ During the first six months of 1913 there passed through the London auctions over 11,000 tons of plantation rubber, as compared with about 7,000 for the corresponding period in 1912.

⁹ The slight decreases in American consumption is another factor worthy of consideration in this connection. The tariff discussion in 1913 and the fear of removal of duties on rubber goods were the cause of much apprehension in the rubber industry and tended to make American manufacturers conservative in their purchases. Then there was the strike in the rubber factories of Akron, where about 50 per cent of the rubber imported into the United States is consumed. It is estimated that during the period of idleness accompanying the strike some 3,000 tons of rubber which would under normal conditions have been consumed in Akron, remained on the market. And, finally, there should be remembered the flood of the Ohio River in 1913, with the destruction of rubber property and the necessary curtailment of manufacturing operations.

It was estimated that about 35 per cent of these imports would be required for the governmental needs, leaving 65,000 tons to be allocated to the trade for civilian consumption. (See Table IV.) Allocations were made to manufacturers on the basis of seven-sixteenths of their 1917 consumption, and each manufacturer was instructed to apply for an import certificate entitling him, or others in his behalf, to receive an import license for his respective share.

The preliminary negotiations leading to the cutting of imports were held in April and the anticipation by the trade of some form of restriction stimulated buying. Thus large contracts were entered into for the immediate shipment of rubber to the United States in order that stocks might be accumulated before the expected restrictions went into effect. (See Table V.) The restriction of May 8 did not apply to shipments which had left foreign ports prior to that date, and since the time required for transporting rubber from primary markets to the United States is considerable, the actual imports during May, June, and July were much greater than the specified 25,000 tons. In fact, 55,000 tons of rubber entered American ports during these three months. The uncommon size of these imports is to be accounted for entirely by the stimulated purchases of the preceding April.

TABLE V. STOCKS OF RUBBER IN THE UNITED STATES IN 1918.
(Long Tons.)

January 1—		
Held by importers	15,433	
Held by manufacturers	34,738	
Total stocks		47,481
July 1—		
Held by importers	19,349	
Held by manufacturers	28,964	
Total stocks		55,373
October 1—		
Held by importers	12,604	
Held by manufacturers	48,355	
Total stocks		61,019

To prevent a speculative rise in rubber prices as a result of these restrictions, the War Trade Board on May 1 fixed the following maximum prices:

	Cents.
Para upriver fine	68
Plantation	68
First latex, crepe	63
Smoked sheets, standard quality	62

These prices were supplemented on May 14 by maximum prices for other grades of crude rubber; while on May 29, June 13, July 2, and July 6, respectively, still further additions were

made.¹⁹ All prices were on the basis of c. i. f. New York.

The effect of the restrictions upon rubber prices soon became evident, and it later appeared that the fixing of maximum prices had been an unnecessary expedient. The curtailment of imports immediately made itself felt in the primary markets, where already the decreased consumption of other nations had had its effects. The further elimination of means of disposal naturally led to keen competition among the holders of the existing large stocks and prices tended to fall still further.

While the bulk of the market sales for rubber during the latter six months of 1918 was below the quoted maximum prices shown in Figure 2, a small amount of free rubber not subject to War Trade Board allocation which was still on the market was sold at a level distinctly higher than restricted rubber. It is interesting, also, to note that sales of allocated upriver fine Pará rubber were made in September at 58 cents (maximum fixed price being 68 cents), while at the same time plantation first latex crepe sold for 37 cents (maximum fixed price being 63 cents).

This anomaly can be explained in part by the allocating to Brazil by the War Trade Board substantially as much rubber as to the plantations, although the production of the former is but one-sixth of the latter. There resulted, accordingly, a heavy overproduction of the plantation variety and keener bidding at plantation markets for the right to ship to American ports. It should be added also that the maintenance of relatively normal values by Brazilian rubber was in part to be accounted for by the stabilizing control over its price by the Bank of Brazil.

The amount of rubber to be licensed for import was changed on November 22 to 32,500 tons for the last quarter, an increase of 7,500 tons over the previous maximum. Restrictions as to the quantity of crude rubber which might be licensed for import from overseas were further modified on December 12. After that date licenses to import crude rubber from overseas were issued without limit as to quantity, provided applicants conformed with the existing regulations of the War Trade Board. Maximum prices and allocation features were also withdrawn at the same time, although consignments to The Rubber Association were still required and the usual guarantees demanded. That the withdrawal of these regulations had little effect upon crude rubber prices is made evident in Figure 2.

¹⁹ A full list of the types of rubber upon which prices were fixed, to agree with the respective price for each, is presented in "Government Control Over Trade," Bulletin No. 3, War Industries Board.

Standards Recommended by the Tire and Rim Division of the S. A. E.¹

THE STANDARDS COMMITTEE OF THE S. A. E. held a meeting June 23, 1919, to pass on the work accomplished by the various divisions of the Society. The following report of the Tire and Rim Division has been approved by the Standards Committee, the Council, and the Society at the semi-annual meeting and is to be submitted to a letter ballot of the voting members before final adoption as standards of the Society.

SOLID TIRE SIZES.

This subject was presented at the February meeting of the Society, but was referred back to the Division pending further consideration by the National Automobile Chamber of Commerce and the Rubber Association of America. As these organizations have definitely adopted the following solid tire sizes, the Division recommends that these sizes be adopted by the Society.

¹From "The Journal of the Society of Automotive Engineers," August, 1919.

The complete table with metric equivalents follows:

Inches.	Mm.	Inches.	Mm.
32x3	75/660	36x6	150/762
34x3 1/2	90/660	40x6	150/864
34x3 3/4	90/711	36x7	176/762
36x3 1/2	90/762	40x7	175/864
36x4	100/660	36x8	200/762
38x4	100/711	36x10	250/762
36x4	100/762	40x10	250/864
34x5	125/711	40x12	390/864
36x5	125/762	40x14	350/864
36x5 1/2	125/864		

In presenting this report, C. C. Carlton said that these sizes proposed for S. A. E. Standard are an amplification of those which were adopted previously by the Society and the War Industries Board. They were recommended by twenty members of the Tire and Rim Division and include only the present standard sizes and their metric equivalents.

CARRYING CAPACITY OF SOLID TIRES.

This subject has been before the Tire and Rim Division and the Truck Standards Division of the Society for some time, and progress has necessarily been slow as the subject is important from the viewpoints of legislation, truck manufacture and operation and tire manufacture.

The Tire and Rim Division has approved the following recommendation in the belief that it represents good engineering practice and presents it for adoption as S. A. E. Standard:

Solid Tire Width.	Up to and Including 30-in. Diameter, Pounds.	40-in. Diameter, Pounds.
3	1,400	.....
3 1/8	1,500	.....
3 1/2	1,600	.....
3 3/4	1,700	.....
4	1,800	2,600
4 1/8	2,000	3,500
4 1/2	2,200	4,500
4 3/4	2,400	5,600
5	2,600	7,500
5 1/8	2,800	9,500
5 1/2	3,000	11,500
5 3/4	3,200	.....
6	3,400	.....
6 1/8	3,600	.....
6 1/2	3,800	.....
6 3/4	4,000	.....
7	4,200	.....
7 1/8	4,400	.....
7 1/2	4,600	.....
7 3/4	4,800	.....
8	5,000	.....
8 1/8	5,200	.....
8 1/2	5,400	.....
8 3/4	5,600	.....
9	5,800	.....
9 1/8	6,000	.....
9 1/2	6,200	.....
9 3/4	6,400	.....
10	6,600	.....
10 1/8	6,800	.....
10 1/2	7,000	.....
10 3/4	7,200	.....
11	7,400	.....
11 1/8	7,600	.....
11 1/2	7,800	.....
11 3/4	8,000	.....
12	8,200	.....
12 1/8	8,400	.....
12 1/2	8,600	.....
12 3/4	8,800	.....
13	9,000	.....
13 1/8	9,200	.....
13 1/2	9,400	.....
13 3/4	9,600	.....
14	9,800	.....
14 1/8	10,000	.....
14 1/2	10,200	.....
14 3/4	10,400	.....
15	10,600	.....
15 1/8	10,800	.....
15 1/2	11,000	.....
15 3/4	11,200	.....
16	11,400	.....
16 1/8	11,600	.....
16 1/2	11,800
16 3/4	12,000
17	12,200
17 1/8	12,400
17 1/2	12,600
17 3/4	12,800
18	13,000
18 1/8	13,200
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21 1/8	15,600
21 1/2	15,800
21 3/4	16,000
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22 1/8	16,400
22 1/2	16,600
22 3/4	16,800
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27 3/4	20,800
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29	21,800
29 1/8	22,000
29 1/2	22,200
29 3/4	22,400
30	22,600
30 1/8	22,800
30 1/2	23,000
30 3/4	23,200
31	23,400	.....
31 1/8	23,600	.....
31 1/2	23,800	.....
31 3/4	24,000	.....
32	24,200	.....
32 1/8	24,400	.....
32 1/2	24,600	.....
32 3/4	24,800	.....
33	25,000	.....
33 1/8	25,200	.....
33 1/2	25,400	.....
33 3/4	25,600	.....
34	25,800	.....
34 1/8	26,000	.....
34 1/2	26,200	.....
34 3/4	26,400	.....
35	26,600	.....
35 1/8	26,800	.....
35 1/2	27,000	.....
35 3/4	27,200	.....
36	27,400	.....
36 1/8	27,600	.....
36 1/2	27,800	.....
36 3/4	28,000	.....
37	28,200	.....
37 1/8	28,400	.....
37 1/2	28,600	.....
37 3/4	28,800	.....
38	29,000	.....
38 1/8	29,200	.....
38 1/2	29,400	.....
38 3/4	29,600	.....
39	29,800	.....
39 1/8	30,000	.....
39 1/2	30,200	.....
39 3/4	30,400	.....
40	30,600	.....
40 1/8	30,800	.....
40 1/2	31,000	.....
40 3/4	31,200	.....
41	31,400	.....
41 1/8	31,600	.....
41 1/2	31,800	.....
41 3/4	32,000	.....
42	32,200	.....
42 1/8	32,400	.....
42 1/2	32,600	.....
42 3/4	32,800	.....
43	33,000	.....
43 1/8	33,200	.....
43 1/2	33,400	.....
43 3/4	33,600	.....
44	33,800	.....
44 1/8	34,000	.....
44 1/2	34,200	.....
44 3/4	34,400	.....
45	34,600	.....
45 1/8	34,800	.....
45 1/2	35,000	.....
45 3/4	35,200	.....
46	35,400	.....
46 1/8	35,600	.....
46 1/2	35,800	.....
46 3/4	36,000	.....
47	36,200	.....
47 1/8	36,400	.....
47 1/2	36,600	.....
47 3/4	36,800	.....
48	37,000	.....
48 1/8	37,200	.....
48 1/2	37,400	.....
48 3/4	37,600	.....
49	37,800	.....
49 1/8	38,000	.....
49 1/2	38,200	.....
49 3/4	38,400	.....
50	38,600	.....
50 1/8	38,800	.....
50 1/2	39,000	.....
50 3/4	39,200	.....
51	39,400	.....
51 1/8	39,600	.....
51 1/2	39,800	.....
51 3/4	40,000	.....
52	40,200	.....
52 1/8	40,400	.....
52 1/2	40,600	.....
52 3/4	40,800	.....
53	41,000	.....
53 1/8	41,200	.....
53 1/2	41,400	.....
53 3/4	41,600	.....
54	41,800	.....
54 1/8	42,000	.....
54 1/2	42,200	.....
54 3/4	42,400	.....
55	42,600	.....
55 1/8	42,800	.....
55 1/2	43,000	.....
55 3/4	43,200	.....
56	43,400	.....
56 1/8	43,600	.....
56 1/2	43,800	.....
56 3/4	44,000	.....
57	44,200	.....
57 1/8	44,400	.....
57 1/2	44,600	.....
57 3/4	44,800	.....
58	45,000	.....
58 1/8	45,200	.....
58 1/2	45,400	.....
58 3/4	45,600	.....
59	45,800	.....
59 1/8	46,000	.....
59 1/2	46,200	.....
59 3/4	46,400	.....
60	46,600	.....
60 1/8	46,800	.....
60 1/2	47,000	.....
60 3/4	47,200	.....
61	47,400	.....
61 1/8	47,600	.....
61 1/2	47,800	.....
61 3/4	48,000	.....
62	48,200	.....
62 1/8	48,400	.....
62 1/2	48,600	.....
62 3/4	48,800	.....
63	49,000	.....
63 1/8	49,200	.....
63 1/2	49,400	.....
63 3/4	49,600	.....
64	49,800	.....
64 1/8	50,000	.....
64 1/2	50,200	.....
64 3/4	50,400	.....
65	50,600	.....
65 1/8	50,800
65 1/2	51,000
65 3/4	51,200
66	51,400
66 1/8	51,600
66 1/2	51,800
66 3/4	52,000
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67 1/8	52,400
67 1/2	52,600
67 3/4	52,800
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68 1/8	53,200
68 1/2	53,400
68 3/4	53,600
69	53,800
69 1/8	54,000
69 1/2	54,200
69 3/4	54,400
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70 1/8	54,800
70 1/2	55,000
70 3/4	55,200
71	55,400
71 1/8	55,600
71 1/2	55,800
71 3/4	56,000
72	56,200	.....
72 1/8	56,400	.....
72 1/2	56,600	.....
72 3/4	56,800	.....
73	57,000	.....
73 1/8	57,200	.....
73 1/2	57,400	.....
73 3/4	57,600	.....
74	57,800	.....
74 1/8	58,000	.....
74 1/2	58,200	.....
74 3/4	58,400	.....
75	58,600	.....
75 1/8	58,800	.....
75 1/2	59,000	.....
75 3/4	59,200	.....
76	59,400	.....
76 1/8	59,600	.....
76 1/2	59,800	.....
76 3/4	60,000	.....
77	60,200	.....
77 1/8	60,400	.....
77 1/2	60,600	.....
77 3/4	60,800	.....
78	61,000	.....
78 1/8	61,200	.....
78 1/2	61,400	.....
78 3/4	61,600	.....
79	61,800	.....
79 1/8	62,000	.....
79 1/2	62,200	.....
79 3/4	62,400	.....
80	62,600	.....
80 1/8	62,800	.....
80 1/2	63,000	.....
80 3/4	63,200	.....
81	63,400	.....
81 1/8	63,600	.....
81 1/2	63,800	.....
81 3/4	64,000	.....
82	64,200	.....
82 1/8	64,400	.....
82 1/2	64,600	.....
82 3/4	64,800	.....
83	65,000	.....
83 1/8	65,200	.....
83 1/2	65,400	.....
83 3/4	65,600	.....
84	65,800	.....
84 1/8	66,000	.....
84 1/2	66,200	.....
84 3/4	66,400	.....
85	66,600	.....
85 1/8	66,800	.....
85 1/2	67,000	.....
85 3/4	67,200	.....
86	67,400	.....
86 1/8	67,600	.....
86 1/2	67,800	.....
86 3/4	68,000	.....
87	68,200	.....
87 1/8	68,400	.....
87 1/2	68,600	.....
87 3/4	68,800	.....
88	69,000	.....
88 1/8	69,200	.....
88 1/2	69,400	.....
88 3/4	69,600	.....
89	69,800	.....
89 1/8	70,000	.....
89 1/2	70,200	.....
89 3/4	70,400	.....
90	70,600	.....
90 1/8	70,800	.....
90 1/2	71,000	.....
90 3/4	71,200	.....
91	71,400	.....
91 1/8	71,600	.....
91 1/2	71,800	.....
91 3/4	72,000	.....
92	72,200	.....
92 1/8	72,400	.....
92 1/2	72,600	.....
92 3/4	72,800	.....
93	73,000	.....
93 1/8	73,200	.....
93 1/2	73,400	.....
93 3/4	73,600	.....
94	73,800	.....
94 1/8	74,000	.....
94 1/2	74,200	.....
94 3/4	74,400	.....
95	74,600	.....
95 1/8	74,800	.....
95 1/2	75,000	.....
95 3/4	75,200	.....
96	75,400	.....
96 1/8	75,600	.....
96 1/2	75,800	.....
96 3/4	76,000	.....
97	76,200	.....
97 1/8	76,400	.....
97 1/2	76,600	.....
97 3/4	76,800	.....
98	77,000	.....
98 1/8	77,200	.....
98 1/2	77,400	.....
98 3/4	77,600	.....
99	77,800	.....
99 1/8	78,000	.....
99 1/2	78,200	.....
99 3/4	78,400	.....
100	78,600	.....
100 1/8	78,800	.....
100 1/2	79,000	.....
100 3/4	79,200	.....
101	79,400	.....
101 1/8	79,600	.....
101 1/2	79,800	.....
101 3/4	80,000	.....
102	80,200	.....
102 1/8	80,400	.....

The Manufacture of Rubber and Fabric Shoes.

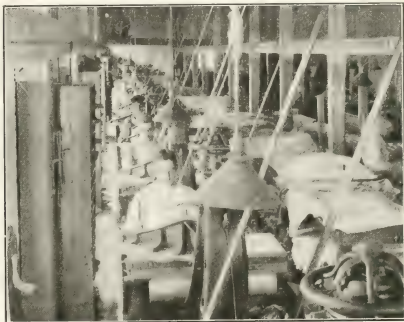
India rubber is the great supplanter. Just as rubber hose dispossessed leather hose, an rubber both the superheated brick, and the rubber tire that of wood and iron, so rubber and fabric shoes are winning against leather in the footwear field. In this crusade the so-called "Tennis" shoe was and is the entering wedge.

THE TENNIS SHOE, sand-shoe, or "sneaker," with its variants for yachting, gymnasium, basket-ball, etc., was for years a minor part of the rubber footwear business. It was not esteemed either by maker, marketer or user. Oftimes it was made of the cheapest materials, hastily thrown together and

It therefore has come about that "Keds" and their analogs, while they are still tennis shoes, show a vast improvement over their prototypes of the dry-heat days. A tennis shoe to-day, of the best type, has all of the lines of the best of leather footwear. It has a solid rubber heel, a counter that is generous and



DYING OUT TENNIS TOPS.



DYING OUT LEATHER INSOLES.

the product stored in bins by the retailer to be pawed over by the bargain hunters and the slip-shod.

For many years the bulk of the tennis goods showed black soles. This was simply because the old-time dry-heat compounds called for litharge to effect the cure, the heat being some seven hours. White soles were sometimes brought out by using zinc sulphide, and some very excellent tans were produced.

strong, and inside of the rubber outer sole is a fiber sole, in place of the time-honored rag-filler, and over this a leather inner sole and a kid heel-piece. The stitching, the lacings, the celluloid-covered eyelets, the finish, all are first-class and really elegant.

The fact is, the tennis shoe is to-day an important factor in the rubbershoe factory. Hence the laboratory has taken up the



STITCHING THE UPPERS.



CUTTING FOXINGS.

With the success of the pressure cure and the use of accelerators former handicaps were removed and a much more varied line of goods produced. The quality was also notably increased.

question of stocks and evolved for sole and heel those that are light and yet wear-resisters. For cements, thanks to mixed catalyzers, they have so far beaten the old "yellow

ement" that the workmen would use soft soap as a stickler rather than return to it. In the handling of fabrics, drying, brushing, singeing, and often cravenetting, the greatest care is taken and the latest methods employed.

The beginning of tennis shoe making, next to the laboratory compounds, is the last making. Under expert designers maple lasts are evolved and turned out by thousands on automatic last lathes. Then pattern cutters design the patterns. For hand work they are of thin sheet metal or heavy cardboard; for dies they are of metal.

Aside from the regular equipment of rubber washers, vacuum dryers and mixers, are special soling calenders with engraved rolls for running the soles. There are also tubing machines for forcing heel stock and presses for forming and semi-vulcanizing heels.

MAKING THE UPPERS.

The manufacturer begins with cutting the fabric for the tops or uppers. This is accomplished by means of cutting dies of suitable shape for the various cloth parts. The fabric having been carefully arranged in the form of a slab about an inch thick, is



THE OPERATION OF LASTING.

drawn progressively through the power-cutting-press over a wooden cutting-block. The operator adjusts the proper die and by pressure on the foot-treadle of the machine stamps out with great rapidity and accuracy pieces of the required size and form.

The lower edges of the vamp or upper and its lining are united to the rubber sole in the finished shoe by rubber cement. Therefore these parts go to the cementers who apply the cement required. The work is regulated by the use of metal forms or patterns to locate properly the cement coating. This operation is a particular one from the standpoint of neatness as any spots of misapplied cement will show on the finished product as disfiguring indelible marks.

The cemented vamps and linings together with the other cloth pieces such as tongues, etc., are delivered to the stitching room, where, with power sewing-machines, women operators skilfully assemble and sew the parts together in the form of uppers, preparatory to the operation of lasting. The tongues are bound with tape and inserted, and by special machines the eyelets and lacing studs are applied. The complete upper is then laced up on a lacing machine and is ready for delivery to the assembly room.

LEATHER AND RUBBER PARTS.

The leather inner sole is died out by cutting dies in a light power press, known as a clicking machine, operating with a quick blow controlled by a foot treadle.



CEMENTING AND DRYING CEMENT ON CONVEYOR BELTS.

The thin strip of rubber uniting the sole and upper all around the edge of the shoe, is called foxing. The rubber stock from which it is made comes to the cutting room in the form of a long sheet wound with a cotton liner on a roll, the cutter separates the liner from the rubber sheet and draws it over the cutting-block where, by means of a hand-die and raw-hide mallet, he cuts the foxing in curved forms and places it in cloth-leaved books for the maker's use.

DETAILS OF MAKING.

LASTING.

In the assembly of parts the first operation is that of lasting the laced vamp tightly over the shoe last and attaching it over the



ATTACHING THE FOXING.

edges of the inner sole by the adhesion of its cemented edges. The sole at this stage of the process consists of two pieces, the inner part of leather cemented to a rubber and fiber combination stiffening piece.

CEMENTING.

The lasted shoe is given a liberal coating of rubber cement, brush-spread over the bottom and allowed to dry thoroughly before the application of the rubber parts. By means of a conveyor belt, the uncemented shoes reach the cementer and leave

**ATTACHING THE OUTSOLE.**

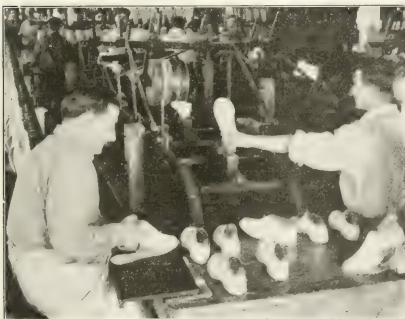
him continuously, drying as they travel toward the next operation.

FOXING.

The finishing strip which encircles the shoe and receives the skived edge of the rubber sole is next put in place, together with a rubber toe piece, in case one is used. The work is sometimes called upping the shoe.

SOLE CUTTING.

The rubber stock for outer soles is run in sheet form by a special calender provided with a knurled roll to impress the design for sole and heel surface and trade-mark in the shank. In

**THE OPERATION OF ROLLING.**

the form of short sheets the calendered soling stock is fed through the sole-cutting machine by which the sole is cut with skived edges, the form and size being controlled by the particular sheet-metal pattern adjusted to the machine.

OUTSOLING.

A part of this operation is done by hand and a part by machinery. The rubber sole must be accurately placed as to width and length and is set as viewed from above. If hand-rolling only is practiced, the work of soling is all done by one operator using an ordinary hand-roller and a stitcher to turn up the skived edge of the sole and unite it perfectly to the foxing. Otherwise the shoe is taken to a rolling machine which rolls the sole and presses it down firmly.

For the work of rolling, automatic machines are used which, although complicated, are simple to handle. The worker sets the shoe in place, moves a switch, and the machine carries the shoe under heavy rollers and back again. Most machines are double so that the operator can set one shoe for each movement of travel. In this way an operator may roll as high as 30,000 to 40,000 shoes in one day.

EDGING.

In team work it is customary to employ a power edging machine which comprises a motor, a rubber hammer, and a steel

**STARCHING WHITE TENNIS SHOES.**

edger. The machine is constructed so that the hammer is driven at a high speed with about a half-inch stroke. The operator holds the shoe up against the hammer and the action of the machine welds the sole down firmly. The edger works much like the hammer and the worker holds the shoe so that the sole is trimmed and the foxing stitched at the same time.

FINISHING.

Clean-finish white tennis shoes are sometimes dusted with starch. They are arranged on trays and placed in a chamber provided with means for carrying away the dust from the workers. Colored shoes receive a brush coat of special vulcanizing varnish on the soles.

CURING.

Vulcanizing is effected, as a rule, in pressure-cure vulcanizers. Following this come stripping off the lasts, inspection, tying, sorting, and boxing in cartons usually made on the premises.

DURING THE MONTH OF FEBRUARY, 1919, 745,906 POUNDS OF plantation rubber were exported from British North Borneo.

What the Rubber Chemists are Doing.

SYNTHESIS OF CAOUTCHOUC.

THE FOLLOWING ABSTRACT from the "Journal of the Society of Chemical Industry," volume 38, 428A, June 30, 1919, summarizes an article by H. Standinger.¹ In polymerizing isoprene, compounds of the terpene series are simultaneously produced, in quantities varying with the conditions of polymerization, and these influence the character of the final product. Synthetic preparations, although very similar to the natural product, are not yet identical, as has been shown by Stemmig.²

In order to obtain a tougher synthetic rubber attempts have been made to mix the isoprene with styrol, linseed oil, and especially tung oil, but all the products are more or less sticky. The ordinary inorganic and organic peroxides, such as sodium peroxide and benzoyl peroxide, do not accelerate the polymerization to such an extent as pure oxygen, but, like ozone, are used in technical processes as catalysts. The varieties of rubber obtained by polymerizing butadiene and dimethyl-butadiene differ in character from the isoprene product, and methylcaoutchouc from dimethylbutadiene is now an important synthetic product in Germany. The yield of isoprene from oil of turpentine is increased by carrying out the process *in vacuo*.³ By using limonene instead of oil of turpentine the yield is increased from about 25 per cent to 65 per cent. Essential oils, however, cannot be obtained in sufficient quantity to be practicable sources of isoprene. The production of butadiene from phenol and of isoprene from cresol would be too expensive, while these substances are required for other purposes. Coke-oven gases are a cheaper source of benzene, and synthetic rubber has been successfully prepared in Germany by converting this benzene successively into cyclohexane, chlorocyclohexane, and tetrahydrobenzene, which, on heating, gives butadiene and ethylene. The amount of butadiene and isoprene in coal tar would only furnish a small fraction of the amount required, while the conversion of alcohol into butadiene would be too expensive, apart from the fact that the most favorable conditions for the reactions have yet to be discovered. If impure butadiene hydrocarbons are used sticky products are formed. American petroleum contains at least one per cent of a mixture of the three pentanes (boiling at 9, 30 and 38 degrees C.), which at the present time is practically a worthless constituent of the gases. About 370,000 tons per annum of these compounds would be available in the United States. It has been shown by Holt⁴ that they could be converted into isoprene, but this synthesis would be practicable only in America. Acetone prepared from acetylene was used in Germany during the war as the source of synthetic rubber. It was reduced by means of aluminum to pinacene, which was then converted into dimethyl-butadiene and dimethylcaoutchouc. The plant is capable of producing about two thousand tons of rubber per annum, but under normal conditions the process would be too expensive.

MECHANICAL COAGULATION OF RUBBER.

A current of air is passed over the surface of the warm latex, the temperature of which is raised either by applying heat at the bottom of the vessel or by preheating the air. In order to avoid the formation of a skin which would prevent the action of the air on the deeper layers of latex, the mass is kept stirred by rocking the vessel. The crêpe obtained from the final coagulum has a light color, and in quality appears comparable with rubber

prepared by the customary process of coagulation with acetic acid. ("Journal of the Society of Chemical Industry," May 31, 1919.)

EFFECT OF EXPOSURE TO WEATHER ON RUBBER GAS-MASK FABRICS.

A paper by G. St. J. Perrott and A. E. Plumb in "The Journal of Industrial and Engineering Chemistry," May, 1919, pages 438-443, reports the results of their investigations on the effect of exposure to weather on rubber gas-mask fabrics.

Fabrics of different manufacture and consisting of finely-woven cotton sheeting covered with a rubber layer from 0.01 to 0.025-inch thick, deteriorated very slowly over a period of 100 days. There was a general relation between the amount of acetone extract and the permeability, and deterioration was more rapid in the summer months than in winter. Fabrics exposed rubber side downwards showed no appreciable deterioration over the whole period; those exposed rubber side upwards, but shielded from ultra-violet light, deteriorated at about the same rate as those exposed to the direct rays of the sun. There was no apparent relation between the results of weather aging and an accelerated aging test at 130 degrees C. The tensile strength of all the fabrics decreased by 15 per cent during the exposure. Both the fabric and rubber rotted when exposed to high concentrations of phosgene for 15 hours. Analysis of the fabrics indicated that over 10 per cent of bitumen was undesirable and that as high as 20 per cent of carbon tended to preserve the fabric, especially when exposed to direct sunlight. Fabrics with a high percentage of gum (rubber) were more resistant than those containing a large amount of filler.

X-RAY EXAMINATIONS.

At a joint session of the Faraday and Rontgen Societies, April 29, 1919, in the rooms of the Royal Society, Burlington House, London, the subject of the examination of materials by X-rays was discussed from an engineering standpoint in a series of papers by noted authorities.

Quoting from abstracts of these papers¹:

It is now known for certain that X-rays are nothing but ordinary light waves of very small wave length. This fact explains their extraordinary property of penetrating all substances, more or less, and it also follows that, generally speaking, the smaller the wave length, the greater the penetrating power. It is therefore the production of the so-called "hard" rays, those of exceedingly small wave length, that principally interests the engineer. But such rays require a very high tension discharge to produce them, and this, coupled with the limitation which the intense local production of heat places in the way of making tubes which can absorb a great deal of energy, is the principal difficulty in the way of practical progress. Up to the present it is hardly a workshop proposition to examine more than an inch or two of steel (although it is claimed that 4 inches have been penetrated)—and even so, considerable exposure is necessary, some 250 seconds for 35 mm., but as much as 2,000 seconds for 40 mm., according to M. Pilon and Mr. Geoffrey Pearce.

The most powerful tubes at present used require a voltage of more than 100,000, and they absorb some 50 kw. It is therefore obvious that further progress will call for all the skill and knowledge at the disposal of the physicist and electrical engineer.

S. A. Pollock, of the British Post Office, stated that for the examination of soft materials like gutta percha, in which impurities were often introduced, and for discovering defects in the lead sheaths of underground cables, the method had been found extremely useful.

GERMAN EBONITE SUBSTITUTE.

A new ebonite substitute known as "Hornite" has been introduced by The Hornite Works Joint Stock Co., Düsseldorf, Germany. Hornite is prepared from industrial residues and in

¹"Schweizer Chemische Zeitschrift," 1919, Volume 1, pages 1-5, 28-33, 60-64.

²"Journal of the Society of Chemical Industry," 1914, page 267.

³"Journal of the Society of Chemical Industry," 1911, page 1023.

⁴"Journal of the Society of Chemical Industry," 1914, page 364.

¹"The Electrical Review," June 6, 1919, page 679.

appearance and wearing qualities not only replaces ebonite, but owing to its extraordinary cheapness and special qualities, may displace ebonite in the market. It may be used for practically every purpose for which ebonite is adapted. ("Electrical Review," London.)

ANALYSIS OF VULCANIZED RUBBER.

THE FOLLOWING METHODS for the analysis of vulcanized rubber are by J. A. S. Morrison in "The India Rubber Journal," June 21, 1919.

RUBBER RESINS.

Rasp the sample into small pieces, weigh out four grams, and extract with acetone in a Soxhlet extractor for two days. Dry the extract at 100 degrees C., and weigh. This extract contains rubber resins and free sulphur, the latter being estimated in the extract as described later. Total extract minus free sulphur gives rubber resins. Reserve the residue from the extraction for the determination of the rubber substitutes.

MINERAL MATTER.

One or two grams of the original sample is boiled with 50 cc. nitrobenzene in a flask fitted with an air reflux condenser; cool and wash into a 300-cc. tall beaker with a mixture of two volumes of sulphuric ether and one volume of ethyl alcohol; dilute to about 250 cc. with this mixture; stir and allow to stand over night to settle. Viscous deposits are due to insufficient ether, and more should be added if these occur. Filter the insoluble matter on a tared filter, dry and weigh. This gives organic matter insoluble in nitrobenzene plus mineral matter. The contents of the tared filter are washed with warm dilute hydrochloric acid. Wash the acid out with water, dry and weigh. Finally ash the paper and residue and weigh. Ash plus loss due to hydrochloric acid washing gives total mineral matter. The extraction with hydrochloric acid is to extract carbonates as such.

The difference between the total nitrobenzene residue on the tared filter and the total mineral matter gives the organic matter insoluble in nitrobenzene. Carbon, if used as a filling, will be included in this figure.

FREE SULPHUR.

Take acetone extract (rubber resins) in flask, moisten with water and cautiously add 25 cc. fuming nitric acid, cooling the flask in ice. Gently warm and finally digest on steam bath, using a funnel as cover. When action is complete wash into a porcelain dish with a few cc. of fuming nitric acid, and evaporate off all the acid. All the sulphur is now converted to sulphuric acid. Intimately mix the mass with five grams of a mixture of three parts sodium carbonate and two parts of potassium nitrate, moisten slightly with water and mix well. Cover with a large dish and heat over a low flame till white. Cool and take up with concentrated hydrochloric acid, evaporate to dryness twice to precipitate silica, and finally dissolve in dilute hydrochloric acid, filter and precipitate as barium sulphate. Filter, dry and calculate as free sulphur.

OXIDIZED OIL RUBBER SUBSTITUTES.

The residue from the acetone extraction in the determination of rubber resins is digested with 100 cc. of approximately half normal alcoholic potash for four hours at 60 to 70 degrees C. Pour off through a filter and digest residue twice with warm alcohol. Mix filtrate and alcoholic washings and evaporate nearly all the alcohol. Take up residue in a little cold water, transfer to a separatory funnel, acidify and remove fatty acids with ether. Evaporate ether extract to dryness and weigh. This gives fatty acids of oxidized oils, and is taken as the percentage of rubber substitutes.

VULCANIZED RUBBER.

This is obtained by subtracting the sum of the other determinations from 100.

TOTAL SULPHUR.

The method is the same as that described under free sulphur, except that the original rasped sample is used. The difference between total and free sulphur gives combined sulphur, but this is included in vulcanized rubber and seldom separately expressed.

Ash is often determined by ashing in a porcelain crucible, recarbonating with ammonium carbonate solution, and finally igniting at a gentle heat. The ash is generally lower than total mineral matter because some mineral matters do not recarbonate easily. Nevertheless it serves as a useful check on the figure for mineral matter.

CHEMICAL PATENTS.

PROCESS OF PRODUCING ISOPRENE. (O. Graul and G. Hanschke. United States patent No. 1,298,929.)

VULCANIZING RUBBER MIXTURE suitable for repairing punctures in tires, consists of crude rubber, one pound; gasoline, three pints; litharge or red lead, seven ounces; lead acetate, two ounces; sulphide of mercury, seven ounces; asphalt, three ounces, and sulphur, 2½ to five per cent of the weight of the rubber. (W. T. Hale, Dodge City, Kansas. United States patent No. 1,300,263.)

METHOD OF TREATING VULCANIZABLE PLASTICS by first applying an internal vacuum, and then vulcanizing under external heat and pressure, the vacuum being continued during that portion of the application of the vulcanizing temperature during which vapors or gases are given off by the rubber. (Raymond B. Price, Mishawaka, Indiana, assignor by mesne assignments to The Goodyear's Metallic Rubber Shoe Co., Naugatuck, Connecticut. United States patent No. 1,309,485.)

DECORATED RUBBER ARTICLES made by compounding a mass of unvulcanized rubber with a light sensitive material, forming the compound into the article desired, and subjecting the surface of the article to light rays conforming with the desired design, and then subjecting the article to heat. (Albert A. Somerville, Flushing, N. Y., assignor to New York Belting & Packing Co., New York City. United States patent No. 1,309,703.)

THE UNITED KINGDOM.

DEVULCANIZING WASTE RUBBER is effected by treatment with a vulcanizing accelerator in the presence of a reagent capable of removing the sulphur as it is liberated. Preferably, uncombined sulphur is first removed; the rubber should be in a finely divided state, for example, in solution; and no moisture should be present. A temperature of 170 to 180 degrees C. is preferable. Examples of accelerators used are aniline, piperidine and paramido-dimethyl-aniline. (D. Spence, Norwalk, Connecticut, U. S. A. British patent No. 126,397.)

SURGICAL DRESSINGS made up in the form of candles with wicks so that the material is readily melted and applied. The candles are coated with paraffined paper or with a solution of lacquer, wax, resin, cellulose acetate. Suitable additions to the paraffine are rubber or latex, antiseptics or medicaments. (P. Ehrhardt, 95 rue Joffroy, Paris. British patent No. 126,501.)

VULCANIZATION ACCELERATORS. Double compounds of nitroso-dimethyl-aniline or its homologs with aromatic bases are used as accelerators in the vulcanization of rubber. Compounds containing two molecules of nitroso-dimethyl-aniline and one molecule of aniline, dimethyl-aniline, ortho-toluidine, diphenylamine, or alpha-naphthylamine are given by way of example. (J. F. B. van Hasselt, 92 Almondestraat, Rotterdam. British patent No. 126,606.)

CHLORINATING INDIA RUBBER. In the production of a substance for use as a substitute for celluloid, leather, or the like, by

creating a solution of rubber with chloroform, or bromine and chlorine, the rubber is dissolved in benzene or a homolog. Chlorine is passed through the solution until the rubber has taken up approximately twice its weight of chlorine. The presence of catalysts is avoided. The hydrochloric acid produced is removed by heating or neutralized, for example, by ammonia or lime. (H. M. Broadhurst and A. Lambie, Cunard Building, Liverpool; S. J. Peachey, 5 Yew Tree Road, Davenport, Stockport; and United Alkali Co., Cunard Building, Liverpool. British patent No. 127,481.)

OTHER CHEMICAL PATENTS.

THE FRENCH REPUBLIC.

- 485,745. Vulcanizable substitute for rubber. J. Elmer.
- 485,748. Isodimer compound. E. von Vargyas.
- 485,778. Treating rubber and rubber substitutes. General Rubber Co.
- 485,797. Treating latex preparatory to vulcanization. General Rubber Co.
- 485,807. Regulating rubber on the line. General Rubber Co.

RUBBER DIVISION OF AMERICAN CHEMICAL SOCIETY.

THE first meeting of the newly organized Rubber Division of the American Chemical Society will be held in Philadelphia, Pennsylvania, September 4 and 5.

A large attendance is expected and in view of the very interesting program that has been provided, the meeting promises to be a most successful one. The following reports and papers will be read:

1. Report of the Executive Committee.
2. Report of the Secretary.
3. Report of the Fruit Jar Ring Committee. J. J. Plumb, chairman.
4. Report of the Committee on Physical Testing. H. E. Simmons, chairman.
5. "A Method of Determining Permanent Set in Rubber Goods." E. L. Davies.
6. "A New Method for the Determination of Sulphur in Rubber Mixtures." G. D. Kratz, A. H. Flower and Cole Coolidge.
7. "The Extraction of Rubber Goods." S. W. Epstein and B. L. Gonyo.
8. "The Theory of Balloon Fabric Protection." John B. Tuttle.
9. "The Expansion of Rubber Compounds." C. W. Sanders.
10. "Volume Increase of Compounded Rubber Under Strain." H. F. Schuppel.
11. "The Determination of Cellulose in Rubber Goods." S. W. Epstein and B. L. Gonyo.
12. "The Variability of Crude Rubber." John B. Tuttle.
13. Symposium on the "Action of Accelerators during Vulcanization." Led by J. H. Scott.
14. "The Action of Certain Organic Accelerators in the Vulcanization of Rubber." G. D. Kratz, A. H. Flower and Cole Coolidge.
15. "Reactions of Accelerators during Vulcanization." C. W. Bedford and Winfield Scott.
16. "The Effect of Organic Accelerators on the Vulcanization Coefficient." D. F. Granger.
17. "The Effect of Compounding Ingredients on the Physical Properties of Rubber." C. Olin North.
18. "Some Methods of Testing the Hardness of Vulcanized Rubber." H. P. Gutley.
19. Symposium on the "Testing of Pigments." Led by George Oenslager.
20. Contribution from M. M. Harrison and M. M. Kahn.
21. "The Manufacture and Use of Crimson Antimony." J. M. Bierer.
22. "Laboratory Aprons." C. P. Fox.
23. "The Value of a Library to the Rubber Laboratory." H. E. Simmons.

FIFTH NATIONAL EXPOSITION OF CHEMICAL INDUSTRIES.

The Fifth National Exposition of Chemical Industries will be held at Chicago, Illinois, Coliseum and First Regiment Armory, the week of September 22, 1919.

This will be the largest gathering of chemists in the United States since the war. The leading engineering and metallurgical societies of the country plan to hold meetings at which many interesting and important papers will be presented. There will be many new exhibitors in addition to all the former ones, covering the entire field of chemical industries.

"CRUDE RUBBER AND COMPOUNDING INGREDIENTS" AND "RUBBER MACHINERY," by Henry C. Pearson, should be in the library of every progressive rubber man.

LABORATORY APPARATUS.

QUIET EVAPORATION.

THE TENDENCY OF SOLUTIONS in beakers or flasks to bump on a hot plate may be obviated by substituting an oil bath for the plate. The containers should be immersed so that the oil of the bath will be at a higher level than that of the solution to be heated. The solution will thus be heated evenly and boil quietly as in the case of steam-jacketed kettles.—("The Chemist-Analyst.")

PINCH CLAMP.

The Day pinch clamp, shown in the illustration, can be placed on rubber tubing from the side without disconnecting the apparatus. It has a firm, strong grip, sufficient for all tubing up to 3/8-inch in diameter. The thumb grips are large and well located for effectiveness. This is said to be the only pinch clamp on the market that can be fastened on tubing without disconnecting the apparatus of which it is a part. (Central Scientific Co., 460 East Ohio street, Chicago, Illinois.)



DAY PINCH CLAMP.

WEIGHING BURETTE.

A simple weighing burette has been devised to avoid certain of the disadvantages of ordinary burettes, such as inaccuracy of bore, temperature variation, drainage, and difficulty of accurate reading. This instrument obviates all corrections and allows nearly as rapid work as the ordinary style, with accuracy limited only by the sensitiveness of the end-point.

To use the burette, turn up with the cock closed, so that the capillary is over the titrating vessel, and allow the heat of the hand to force the standard solution into the capillary. Then when the cock is opened the liquid will flow freely, and there will be no danger of loss through the cock. When near the end-point, the cock may be closed and the solution forced in drops by the heat of the hand.

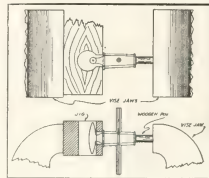
A predetermined quantity of solution cannot be delivered without repeated weighings, but a little practice will enable the user to estimate the desired quantity within a few per cent. A 100-cc. flask with rubber stopper, cock, and capillary, weighs about 40 grams.—("The Journal of Industrial and Engineering Chemistry," July, 1919.)



WEIGHING BURETTE.

REMOVING PLUGS FROM STOP-COCKS.

An effective device for removing plugs from glass stop-cocks is here illustrated and described.



METHOD OF REMOVING STOP-COCK PLUGS.

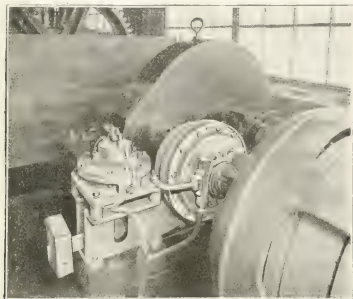
With nothing but wood, the plug can easily be removed without damaging either barrel or plug.—("The Journal of Industrial and Engineering Chemistry," May, 1919.)

The common method of removing the stuck plug is to hammer gently on a small piece of wood placed on the plug, often resulting in the barrel being cracked, the plug chipped and breakage of important parts of complex apparatus. If, however, the steady pressure of an ordinary vise is exerted on the plug with the glass in contact

New Machines and Appliances.

C-H SOLENOID BRAKE, FOR RUBBER MILL DRIVE.

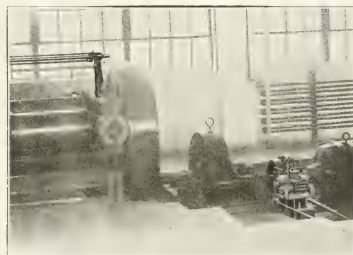
THE INSULATION of brakes and clutches on driving shafts for the instantaneous stopping of rubber mill machinery is now almost universal in the large rubber plants, and many of the smaller plants are employing this means of reducing the hazard assumed by workmen engaged at the mixing



C-H MAGNETIC CLUTCH BRAKE ON WASHER LINE.

rolls, washers, crackers and calenders. Electrically operated brakes and clutches have the advantage of remote control. This is a very important feature as it permits the releasing of these devices by switches located conveniently to the workmen.

A brake which is applied by gravity and released by an electro-magnet is especially desirable because it is positive in its operation. A band brake of this type consists of a cylindrical cast-iron shell enclosing a bobbin-wound coil, which when energized actuates a plunger. The brake band of woven asbestos lining is drawn taut by means of a weighted lever, which is



MAGNETIC BRAKE AND CLUTCH ARE OPERATED BY MOVEMENT OF CRADLE SWITCH OVER WASHERS.

attached to the solenoid plunger. When the lever is in its normal position, the brake is applied. Upon starting the motor the current energizes the solenoid, thus lifting the lever and releasing the brake. As no latches of any kind are used, there is no possibility of the brake failing to function. Any derange-

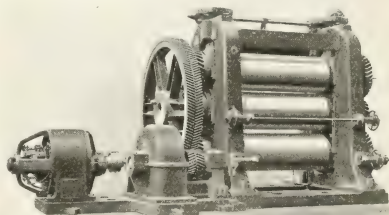
ment in the solenoid brake system causes the brake to be applied, thus resulting in a safe condition.

In a recent test a 200-h.-p., 590-r.p.m. motor driving three mills without load at full speed, was disengaged by a cut-off device, the brake and clutch being operated at the same time. A chronograph employed to measure the movement of the drive-roll periphery indicated only 4 inches subsequent to the operation of the cut-off device. The same test was repeated with the brake inoperative and the chronograph indicated a movement of 86 inches. When neither the brake nor clutch was used, the rolls traveled 376 inches, or about four revolutions. Under normal working conditions, with the mills loaded, the movement of the rolls will necessarily be still less than the minimum of 4 inches obtained in this test.

It is thus shown that although a clutch alone affords a large measure of protection, complete protection is impossible without the use of a brake. (The Cutler-Hammer Manufacturing Co., Milwaukee, Wisconsin.)

A NEW THREE-ROLL CALENDER.

The advantages claimed by the makers of this recently designed machine are that the calender, reducing gear, and motor are all mounted on a straight line bed-plate, the design is compact, and the reducing gear is mounted on roller bearings and provided with splash oiling system while the jack-shaft bearing is combined with the gear-reducing housing.



THE W-S-M CALENDER.

The calender frame is of the hollow cast-iron type and heavily ribbed. It is firmly tied across the top with two cast-iron separators and at the bottom with the cast-iron base plate. The rolls are cast iron with chilled face, finished all over and ground to size. They are cast hollow, bored out to insure uniform thickness, and ground concave and convex to suit their respective work. They are fitted with packing boxes for water connections and any or all of them can be removed without removing either frame from the base plate. Each roll is carried on cast-iron bearing shells lined with hard bearing bronze. The bearing bushings have large oil grooves and are lubricated from sight feed glass oil-cups mounted on the frame.

The calender is equipped with cut herringbone-gears throughout except the wind-up gears which are cut spur-gears.

The upper and lower rolls can be adjusted to any desired opening by a hand-wheel located on the side of the frame. It consists of a series of bevel and worm gears and screws that act directly on the bearing shells. Either end of either roll can be lowered or raised by engaging or disengaging the clutches

which form a part of the adjusting mechanism. A motor for raising or lowering the rolls can be placed on the calendar frame.

A friction-driven wind-up and friction-controlled let-off are mounted on the frame. This wind-up is driven through a train of cut spur-gears from the end of the rolls to the adjustable friction-clutch on the spindle. All of the gears are protected by cast-iron guards. The wind-up can be run in either direction by changing one of the spur-gears from one stud to another.

The calender is equipped with an adjustable knife holder with sufficient number of collars to perform all ordinary operations.

In the reducing gear cut herringbone-gears are used. The pinion is of forged high-carbon steel and is made in one piece with the shaft. The gear is a steel casting. The shafts are mounted on heavy-duty steel mill-type roller bearings and the gears are encased in a cast-iron oil-tight housing. The lower half of the housing carries the bearing.—(The Wellman-Seaver-Morgan Co., Cleveland, Ohio.)

THE BRADLEY STENCIL MACHINE.

The stencil machine here pictured is a device for the shipping department to save time and labor in the addressing of freight and express shipments.

On this machine, a consignee's name and address can be cut into a paper stencil in about 30 seconds. With this stencil, the average shipment can be marked in one-fifth the time consumed



MACHINE FOR CUTTING STENCILS.

by the average marker with a hand-brush. By laying the stencil on the box or carton, and then rubbing the brush over it, the name and address are left imprinted neatly and legibly on the surface of the package.

On account of its neatness, stenciling is considered an improvement over tagging or labeling. Because it is always legible and secure, the express and railroad companies recommend stenciling to obviate lost and delayed shipments. (Bradley Stencil Machine Co., St. Louis, Missouri.)

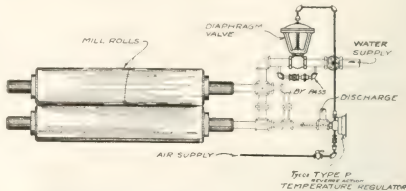
MILL ROLL TEMPERATURE CONTROL.

It is a well-known fact that rubber stock while being mixed on the rolls constantly builds up frictional heat, and if not controlled it will start vulcanization and result in burning the stock, making it unfit for use.

The regulator shown in the accompanying illustration automatically controls the temperature in mill rolls, and operates in the following manner:

The thermostatic element of the regulator is placed in the discharge line from the mill-roll, the diaphragm valve being placed on the inlet water line of the mill-roll. The regulator is of the type known as a reverse action regulator—that is, it functions when the temperature reaches a certain height, so

that through a direct-action diaphragm valve, an increasing flow of water will be admitted to the line going to the mill-roll, thus



TYPE P TEMPERATURE

REGULATOR, CONTROLLING

TEMPERATURE IN MILL-ROLLS

BY MEANS OF COOLING WATER.

NOTE: BY PASS MUST BE CRACKED OPEN TO

INSURE CIRCULATION AROUND REGULATOR STEM

MILL ROLL TEMPERATURE REGULATOR.

bringing the temperature down. (Taylor Instrument Co., Rochester, New York.)

RUBBER-DUST COLLECTOR.

A new application of a well-known principle may be seen in the accompanying illustration that shows a blower being used for removing rubber dust from a tire-buffing machine.

The installation consists of a direct-connected volume blower set on a platform on the side wall. A duct runs from the inlet or exhaust side of the blower to two emery buffing wheels. These emery wheels are partly covered by a crescent-shaped hood, which catches the dust from the tire casing, draws it up into the blower, and discharges it into the cyclone dust collector. The rubber particles and grindings after entering the collector drop to the bottom through a pipe into a receptacle. (Ilg Electric Ventilating Co., Whiting and Wells streets, Chicago, Illinois.)



REMOVING DUST FROM TIRE BUFFER.

MACHINERY PATENTS.

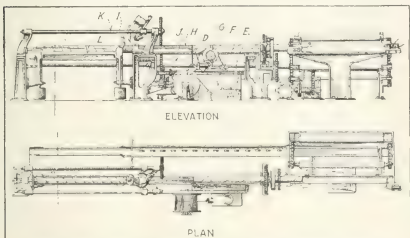
CORD-FABRIC-FORMING MACHINE.

THE FABRIC-FORMING MACHINE here illustrated produces rubberized cord fabric for tire building by a method which eliminates the losses of economy inherent in the usual methods of cord-tire construction.

The machine is of such character that a spool of cord is placed at one point in the machine and in its course through the machine is impregnated with rubber, wound on a mandrel and receives a skim coating of rubber, applied over the cords formed upon the mandrel; then, this covering of rubberized and coated cords is cut on the bias into plies of width required for building a tire carcass.

The central unit of the machine includes a mandrel-driving mechanism, and a cord-impregnating, feeding, and tensioning mechanism for supplying the cord to the mandrel. A second unit consists of the mandrel-collecting and feeding mechanism. The third unit comprises the gum-wrapping and stripping mechanism.

In operation, the cord from the spool *D* passes through the cement pot *E*, through the vacuum-drying chamber *F*, around the tension *G* to a securing hook on the end of a mandrel *H* which is spirally grooved at a light pitch. The mandrel is rotated and the winding of the rubberized cord upon the mandrel commences. At this time the mandrel-loading mechanism is put in operation so that when the first mandrel is completely



MACHINE FOR MAKING TIRE-BUILDING FABRIC STRIPS.

wound, another one will be in the proper position to be next covered with the cord.

When the mandrel is nearly wound the free end of a gum strip *I* is attached to the end of the mandrel and the driving mechanism *F* thrown into operation. This causes the screw-threaded rail *K* to revolve slowly, and the gum-strip-applying mechanism to travel in opposite direction to that of the mandrel. The difference in speed compensates for the width of the gum strip, allowing sufficient lapping to cover the mandrel completely. At the completion of this operation the rotation of the gum strip is stopped and the operator then severs the cord at the junction of the two mandrels, fastening the ends around the securing hooks on the mandrels. The transferring cradle is then rocked, delivering the freshly covered mandrel into the stripping trough *L*. The machine is again started and the operation just described is repeated.

In the stripping trough the mandrel is stripped of its covering by means of a knife inserted into an appropriate groove. The operator slowly revolves the mandrel with one hand at the same time thrusts the knife forward in the groove with his other hand and severs the cords and fabric. He then deposits the severed fabric strip in any suitable stock take-up or rolling table. (Frank A. Seiberling, Akron, Ohio, assignor to The Goodyear Tire & Rubber Co., a corporation of Ohio. United States patent No. 1,309,424.)

OTHER MACHINERY PATENTS.

THE UNITED STATES.

- N^O. 1,308,834. Repair vulcanizer. J. W. Arthur, assignor to The Williams Foundry & Machine Co.—both of Akron, O.
1,309,845. Electric repair vulcanizer. O. C. Henry, Chicago, Ill.
1,309,894. Retreading apparatus. K. R. Kilburn, assignor to The Good-year Tire & Rubber Co.—both of Akron, O.
1,310,236. Tire-making machine. J. R. Gammeter, Akron, O.
1,310,439. Apparatus and method for making hollow rubber articles. F. T. Roberts, Cleveland Heights, assignor to The Paramount Rubber Co., Cleveland—both in Ohio.
1,310,440. Apparatus and method for making hollow rubber articles. F. T. Roberts, Cleveland Heights, assignor to The Paramount Rubber Co., Cleveland—both in Ohio.
1,310,441. Apparatus and method for making rubber imples. F. T. Roberts, Cleveland Heights, assignor to The Paramount Rubber Co., Cleveland—both in Ohio.
1,310,442. Apparatus and method for making hollow rubber articles. F. T. Roberts, Cleveland Heights, assignor to The Paramount Rubber Co., Cleveland—both in Ohio.

- 1,310,701. Machine for building pneumatic tires. E. Hopkinson, New York City.
1,311,012. Apparatus for vulcanizing rubber boots and shoes. F. R. Ross, Cape Girardeau, Mo.
1,311,121. Apparatus for making rubber wads for electric insulation. Hately, Basel, Switzerland.
1,311,375. Press for vulcanizing tires to different degrees of hardness. J. H. Birkenbeul, Portland, Ore.
1,311,560. Repair vulcanizer. E. T. Horsley, Cleveland, O.
1,311,613. Tire-vulcanizing apparatus. M. L. R. Munner, Pittsburgh, Pa., assignor to E. B. Sawyer, Lincoln, Neb.
1,312,856. Apparatus for making rubber shoes. F. and B. De Mattia, Clifton, N. J.

THE DOMINION OF CANADA.

- 191,586. Apparatus for vulcanizing rubber water bottles. The Canadian Consolidated Rubber Co., Limited, Montreal, Que., assignee of J. L. Mahoney, New Haven, Conn., U. S. A.
191,722. Apparatus for making hollow rubber articles. The Armar Co., assignee of F. T. Roberts—both of Cleveland, O., U. S. A.

THE UNITED KINGDOM.

- 126,111. Apparatus for making tires. Dunlop Rubber Co., 14 Regent Street, Westminster, and C. Macbeth and C. K. Jones, Para Mills, Aston Cross, Birmingham.
126,131. Apparatus for making inner tubes. Dunlop Rubber Co., 14 Regent Street, Westminster, and C. Macbeth, Para Mills, Aston Cross, Birmingham.
126,181. Tire molds for shaping and vulcanizing. D. Mosley & Sons and T. W. Dunlop, Chord Field Works, Ardwick, Manchester.
127,406. Apparatus for making joint-making packing from rubber and asbestos fiber. Potter's Robests Co., Rochdale, and D. Bridge & Co., and R. Bridge, Castleton Iron Works, Castleton, both in Lancashire.
127,533. Means to prevent grit from entering bearings of rubber washing machines. O. Shaw, Corbett Street Iron Works, Corbett street, Bradford, Manchester.

THE FRENCH REPUBLIC.

- 489,652. Improvements in apparatus for impregnating or treating fabrics and other materials. J. D. Taylor.
489,776. Improvements in apparatus and methods for the fabrication of an elastic substance. Revere Rubber Co.
489,812. Improvements in calendars for the treatment of rubber. Morgan & Wroth.
489,813. Improvements in machines for shaping cylindrical bodies by rolling up. Revere Rubber Co.
491,462. Apparatus and process for mixing rubber or similar materials. C. H. Gray.
491,189. Machine for attaching two-piece heels having rubber tread portions. United Shoe Machinery Co. of France.
491,291. Machine for inserting buckles in S. A. shoes. United Shoe Machinery Co. of France.
491,283. Improvements in apparatus for placing valves on pneumatic tires or other pneumatic articles. Dunlop Rubber Co. of Australasia, Limited.

PROCESS PATENTS.

THE UNITED STATES.

- N^O. 1,309,118. Stripping down carcasses of used tires to make leggings. J. DeLong and E. A. Tinsman, Akron, O.
1,309,687. Manufacture of inner tubes for pneumatic tires. I. B. Jeffries, Llanelly, Wales.
1,310,013. Reclamation of vulcanized rubber by swelling under pressure and suddenly releasing pressure. H. K. Haerel, Franklin, Mass.
1,310,436. Manufacture of tubes for pneumatic tires. F. T. Roberts, assignor to The Paramount Rubber Co.—both of Cleveland, O.
1,310,437. Manufacture of inflatable rubber articles. F. T. Roberts, assignor to The Paramount Rubber Co.—both of Cleveland, O.
1,311,392. Joining rubber tubes. R. J. Harrison, Chicago, Ill., Mass.
1,311,738. Manufacture of puncture-proof tire-tubes. G. F. Armstrong, Rutherford, N. J.

THE DOMINION OF CANADA.

- 191,583. Manufacturing felt articles with an apron, etc. The Canadian Consolidated Rubber Co., Limited, Montreal, Que., assignee of F. Sage, Hastings, Ont.
191,584. Closing opening in hollow rubber article, vulcanizing, etc. The Canadian Consolidated Rubber Co., Limited, Montreal, Que., assignee of J. L. Mahoney, New Haven, Conn., U. S. A.
191,585. Joining vulcanized rubber parts under tension, applying pressure, and vulcanizing. The Canadian Consolidated Rubber Co., Limited, Montreal, Que., assignee of J. L. Mahoney, New Haven, Conn., U. S. A.
191,723. Vulcanizing pneumatic-tire casings, etc. F. T. Roberts, Cleveland, O., U. S. A.

THE UNITED KINGDOM.

- 125,871. Wrapping electrodes of secondary batteries with tape of rubber or other insulating material. Fuller Accumulator Co., Woodland Works, Chiswell Heath, and T. Jones, 33 Kimtons Road, Goodmayes, both in Essex.
136,236. Ornamenting rubber articles by dipping in solution of colored rubber, dropping other coloreds on them irregularly, drying, and vulcanizing. C. E. Leheup, 35 Vernon Road, Leytonstone, London.
126,641. Manufacture of packing and insulating material from layers of thin asbestos felt coated with rubber. I. H. Levin, 101 West 140th street, New York City, U. S. A. (Not yet accepted.)
127,544. Manufacture of rubber balls. K. Fukuda, 3394, Oimachi-Tharugun, Tokio, Japan.

THE FRENCH REPUBLIC.

- 491,587. Method and means employed in making rubber tires. J. A. Swinchart.

THE EDITOR'S BOOK TABLE.

"TECHNICAL CHEMICAL ANALYSIS." BY R. H. H. AUNGST, INSTRUCTOR in Technical Chemistry, Pratt Institute, Brooklyn, New York. The Wiley Technical Series, J. M. Jameson, Editor. John Wiley & Sons, Inc., New York. 417 pp., loose leaf, 8 by 10 1/2 inches, 44 sheets.)

THIS publication constitutes a loose-leaf laboratory manual for students, and comprises methods for the technical chemical analysis of a variety of organic and inorganic products as coal, iron and steel, water, sugar, animal and vegetable oils, pigments, paints and rubber. In view of the practical importance of the subject the section devoted to the analysis of rubber might well be extended to include many more available analytic methods.

"BULLETIN" (SERIES CAOUTCHOUCS), INSTITUT COLONIAL DE RECHERCHES CHIMIQUES, 11, Boulevard L. Pasteur, 49, Quai des Grands Augustins, Paris.

THE "Bulletin des Caoutchoucs," of which two numbers have appeared to date, is one of several publications of the Institut Colonial de Marseille, France. The work of the Institute is comprised in special sections devoted respectively to cereals and starch-producing plants, grasses and caoutchouc. The chief of the caoutchouc section is G. Van Pelt, who discusses at length in Bulletin No. 1 the program of the section, and proposes in conclusion:

1. The establishment of laboratories on important plantations under the direction of specialists qualified to undertake the study of questions of interest concerning production, or at least have present on the ground a director experienced in the scientific culture and preparation of caoutchouc.
2. Continuous collaboration of the plantation technical service with special laboratories, official or otherwise, in the producing countries.
3. The establishment of a scientific evaluation service in place of the present empirical trade methods.
4. A scientific organization specializing in matters applying to the rubber industry.
5. Close collaboration of this scientific organization with the technical service for manufacture.

In demonstrating the advantages to be derived from the application of the above proposals the importance is repeatedly insisted upon of connecting all the various organizations working within its prescribed limits. This connection will permit all specialists to furnish a maximum of useful effort, and they will be kept continuously informed of the condition of the studies undertaken and the importance of the new problems to be investigated.

NEW TRADE PUBLICATIONS.

THE ARMSTRONG RUBBER COMPANY, INC., GARFIELD, NEW Jersey, is sending out an interesting and instructive pamphlet, showing all the stages of the manufacture of its tires and inner tubes from receipt of the crude rubber to the shipment of the finished product. Each stage is illustrated with half-tone engravings, making a graphic exposition of the hand method of building tires. The book is handsomely printed in two colors, with an embossed cover, having a cut-out to show a half-tone of the finished tire.

* * *

F. C. MATHIESON & SONS, LONDON, ENGLAND, HAVE ISSUED Number 20 of their handbook, "Rubber Facts and Figures," under date of May, 1919, which gives in compact form the usual voluminous amount of information regarding the many British-owned rubber planting companies. The book is of value to the investor, giving facts regarding capital stock, area of land and number of trees, annual amount of rubber harvested, dividends paid, etc., and is of interest to the rubber trade generally as showing the steady increase in production of plantation rubber, its fluctuations of prices, costs, forward sales, etc.

THE RUBBER GROWERS' ASSOCIATION HAS PUBLISHED THE FIRST number of its "Bulletin," which is to be sent free to every member of the Association. There will be no advertisements. Besides papers on rubber supply, markets, and so forth, and the proceedings of the Association, the "Bulletin" prints a variety of scientific papers and articles relating to rubber in all its branches.

* * *

"TIRE TRADE JOURNAL." THIS IS A NEW AND INTERESTING publication from the press of The Gardner-Moffat Co., Inc., of New York. It carries some 20 pages of reading, 30 of advertising, and a very complete price list of standard makes of tires and tubes. In his excellent foreword the Editor outlines the broad field that the publication plans to cover. In brief, while the manufacturer of tires will be kept informed regarding new processes and machines, the tire dealer and repair man will also be posted in all that pertains to sales, distribution, and brought into close contact with the manufacturers.

The first issue is excellently gotten up and of much interest. Editor Pinto and his staff are to be congratulated.

* * *

THE MOTOR AND ACCESSORY MANUFACTURERS' ASSOCIATION issues its year book for 1919, at the end of the fifteenth year of the existence of the association. Besides the statement of the work done during the past year, the plans for the future and the formal records of the association, this issue contains interesting accounts of the war activities of the various sections of the association, with many portraits and sketches of officials.

* * *

A NEW CATALOG OF HYDRAULIC MACHINERY MANUFACTURED BY the Camden Iron Works, Camden, New Jersey, includes machines used in the manufacture of pneumatic and solid rubber tires, the heavy type of tire-applying presses used in garages, hydraulic presses for shoe sole and heel manufacture, heavy presses for making rubber hose, accumulators of all types, and steam or power pumps for all services.

* * *

FOREIGN TRADE SERIES NO. 1, ENTITLED "DISCUSSION OF AND Practice and Procedure under the Export Trade Act," has been published by the Federal Trade Commission, Washington, D. C., for the benefit of those desiring to co-operate in the development of American foreign trade through associations formed under the Webb-Pomerene law. The pamphlet contains many facts of importance to all firms doing an export business, including the text of the Webb law, sections of the amended Wilson Tariff Act, and of the Federal Trade Commission Act.

CUSTOMS APPRAISER'S DECISIONS.

No. 43178.—Protests 931667, etc., of The Rubber Association of America et al. (New York).

GUTTA PERCHA, GUTTA HANGKANG, GUTTA KATIAN, GUTTA TEWEH are certain gums, classified at 10 per cent ad valorem under paragraph 385, tariff act of 1913, are claimed free of duty as gutta percha under paragraph 502. Merchandise invoiced as gutta hangkang, gutta katian, gutta percha, and gutta teweh was held entitled to free entry under paragraph 502. G. A. 8194 (T. D. 37759), G. A. 8081 (T. D. 37284), and Abstracts 42908 and 42885 followed. (Treasury Decisions, Volume 36, No. 23, June 5, 1919.)

* * *

No. 43213.—Protest 930720 of Pitt & Scott (New York).

RUBBER RINGS.—Merchandise invoiced as "G. G. rings" classified as a manufacture of hard rubber at 25 per cent ad valorem under paragraph 369, tariff act of 1913, is claimed dutiable as a manufacture of india rubber or gutta percha at 10 per cent under paragraph 368. On the authority of Abstract 43008 the rubber rings in question were held dutiable under paragraph 368. (Treasury Decisions, Volume 36, No. 25, June 19, 1919.)

New Goods and Specialties.

WATERPROOFS IN ENGLAND.

MORE BRILLIANT COLORS and fancy designs are appearing in waterproof goods in London, apparently as a reaction from the gloom of the war. Ladies' waterproofs are being made, for instance, in black and white check with inset collar and belt; or in white with a deep sailor collar inset in black, with a deep flounce and cuffs also black; or in biscuit shades of fawn inset with navy-blue. Cashmeres, in subdued shades of Saxe blue, mauve, champagne, and mole are also seen. Other designs follow the "dazzle" idea.

For children, new designs are carried out in color schemes in which Saxe blue, Royal blue, purple, scarlet, rose-pink, and

many shades of green are employed. Many of the girls' coats have collars, belts and cuffs; cable-stitched or piped. Some are in raglan shape, single or double-breasted, with contrasting trimmings, making the children's garments as smart as those of adults.



FOUR DIFFERENT STYLES OF ENGLISH CHILDREN'S WATERPROOFS.



"PERFECTION" CAPE.

THE "PERFECTION" CAPE.

A new type of waterproof cape is made of Tyco silk, rubberized with Para rubber on one side, with smoked silk finish on the other. It is made in one piece and opens along the sides of the sleeves and body, where it fastens with snap buttons. It packs

8 by 4 by 1½ inches. (Athol Manufacturing Co., Athol, Massachusetts.)



"MURIEL APSOLE" SHOE.

THE "APSOLE" OUTING SHOE.

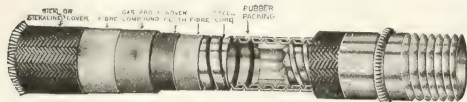
A marked improvement in the manufacture of cloth-upper, rubber-soled footwear, of the so-called "tennis" variety is the elimination of the rubber foxing strip connecting the soles with the uppers, and use of a welt process, somewhat similar to the process used in factories making leather footwear.

The soles are of the "fiber" variety, made of a compound of rubber and fiber, and having greater durability than all-rubber soles, and the inner soles are of cork, insuring coolness and comfort. The result is a much more durable boot or shoe, and a far handsomer one, and as it is made on the latest fashionable last, this line is having such a demand from the trade as to greatly exceed the factory production. (Apsley Rubber Co., Hudson, Massachusetts.)



"GASPRUF" TUBING.

A safe flexible tubing for conveying gas, and one in which gas may be left standing without fear of leakage is shown in the sectional view below. It consists of two tubings in one. An inner core of rubber-packed flexible galvanized steel is covered with a double jacket and with two coverings of gas-proof silk or silklike. The steel core gives the strength necessary for durability and the composition jacket makes the tubing leak-



SECTIONAL VIEW OF "GASPRUF" TUBING.

proof and odor-proof. The rubber ends are corrugated on the inside, so as to hold firmly, and are indestructible and safe. (Atlantic Tubing Co., Providence, Rhode Island.)

"2 IN 1" TREAD FILLER.

A liquid rubber for treating cuts, bruises, and gashes in automobile and motorcycle casings comes in a convenient tube one by six inches. (Van Cleef Brothers, Chicago, Illinois.)

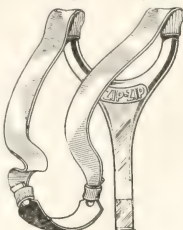
IN ATTACHING RUBBER TIRES TO BOOTS AND shoes, clincher nails are used, which are driven through metal washers, "Klean Kutt Kup"-head rubber-heel nails, just placed on the market, have cup-shaped heads which hold and center the nail-set so that the nail can be driven straight. A center tap-point always clinches with a curl while the heads are flush with metal washers embedded in the heels. The shank corrugations are deeper than those on wire nails. (United Shoe Machinery Co., Boston, Massachusetts.)



"CLEAN CUT" TIRE.

A NEW "SLING-SHOT."

Now that autumn is near, the boys are interested in hunting and shooting, and the boy who cannot have a gun is always glad to have a sling-shot. The one illustrated is suitable for shooting at small game or at a target and is known as the "Zip-Zap." The handle is made of nicely finished metal and is strong and durable. The "sling" portions are made of a very good grade of elastic and have great strength and resiliency as well as durability. Every dealer knows how the possession of a toy like this creates the desire for one like it in other boys who see it, and when the first boy tells where he got his "Zip-Zap," his companions are likely to patronize that same store—and soon. (Automatic Rubber Co., Columbia, South Carolina.)



"ZIP-ZAP" SLING-SHOT.

AN INDUSTRIAL GAS-MASK

Built under the direction of a former executive of the Research Division of the Chemical Warfare Service of the Government, the gas-mask shown here gives the Army standard of gas protection—something never attained before in industrial gas-mask design. The points of particular practicability are: protection against a wide range of industrial gases, fumes, smokes, and dusts; comfort in wearing; clear vision through the eyepieces, made possible by the incoming air drying any moisture on them; quick adjustment; low breathing resistance; no nose-clip or mouth-piece, permitting speech unhindered; no handicap in wearing while at work; light weight; first class quality of materials used in its construction. The complete mask includes the face-piece, the interior of which is illustrated here, made of high-grade, heavy rubber covered on the outside with a protective layer of tough elastic fabric; a canister with connections and fittings; and a durable, light chest harness. The canister contains the materials for absorbing the gas, dust, fumes or smoke, and is replaceable when exhausted through use. The rubber face-piece rests easily against the face and gives both comfort and safety from leakage. (The Mine Safety Appliances Co., Gas Mask Department, Chamber of Commerce Building, Pittsburgh, Pennsylvania.)

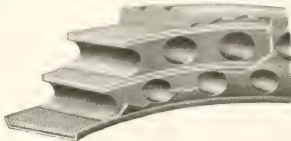


"BURRELL" GAS MASK.

The complete mask includes the face-piece, the interior of which is illustrated here, made of high-grade, heavy rubber covered on the outside with a protective layer of tough elastic fabric; a canister with connections and fittings; and a durable, light chest harness. The canister contains the materials for absorbing the gas, dust, fumes or smoke, and is replaceable when exhausted through use. The rubber face-piece rests easily against the face and gives both comfort and safety from leakage. (The Mine Safety Appliances Co., Gas Mask Department, Chamber of Commerce Building, Pittsburgh, Pennsylvania.)

ANOTHER PUNCTURELESS TIRE.

A tire that claims to eliminate the dangers of puncturing, as well as tire repair bills and the cost of extra tubes and casings comes from the West. It is composed of three layers of corded fabric with cushions of live rubber between and an outer tread of extra tough rubber. The stretchless cord belts distribute the shock vibration, while low-pressure air chambers in the rubber cushions, at regular intervals, give resiliency. (Lambert Tire & Rubber Co., Portland, Oregon.)



LAMBERT "PUNCTURELESS" TIRE.

DUNLOP SELLS BALLS THROUGH PROFESSIONALS.

The Dunlop Rubber Co., Limited, Birmingham, England, is employing the novel sales policy this season of selling its golf balls through professional players exclusively, instead of through sporting goods dealers as well. Having introduced the "Dunlop" golf balls in this way, it was a logical procedure to confine their sale to the club professionals.

MEDICINE DROPPER.

A new style of medicine dropper is an improved form of the well-known combination of rubber bulb and glass tube. However, instead of the usual straight tube, this one has a bulb at the center. The point is glazed, and the rubber bulb is of the best quality. These droppers come packed twelve on a card for display purposes, and each card is, in turn, packed in a separate carton. This dropper is known as the "Maderite" (The Seamless Rubber Co., Inc., New Haven, Connecticut.)

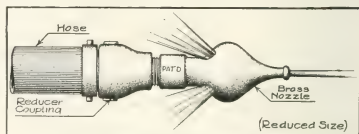


"MADERITE" DROPPERS.

A SELF-PROPELLING NOZZLE.

The "Victory" self-propelling nozzle has recently been invented by John T. Burns, a workman employed by the Department of Sewers, New York City. The point of the nozzle permits a small stream of water, forced through at high pressure, to cut into any obstruction in the sewer and loosen portions of it. This device is extremely simple to operate and accomplishes results.

In the back part of the nozzle are holes through which some of the water is diverted and this tends to float or force the loosened part of the obstruction back to the sewer opening. The force of the water impels the nozzle forward at the same time

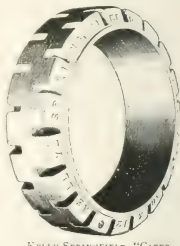


THE "VICTORY" SELF-PROPELLING NOZZLE.

that it forces the obstruction behind it, and pulling the hose with it. Sometimes the distance covered and cleared is as great as two hundred feet. (Sidney Sladden & Co., 1576 Woolworth Building, New York City.)

CATERPILLAR TIRE.

A new style of tire intended for use on heavy trucks is called the "Caterpillar," because it reaches out and grips the road, lets go without friction, and on release puts behind the point of road contact its full resilient force that in a measure overcomes the inertia of the wheel. The tire is applied by a hydraulic press. As shown in the accompanying illustration, the tire is cut into at regular intervals, the spaces alternating on the opposite edges of the outer surface. It is claimed that this tire is much easier on engine and chassis. (Kelly-Springfield Tire Co., 200 West 57th street, New York City.)



KELLY-SPRINGFIELD "CATERPILLAR" TIRE.

Six Years of Tire Production in the United States.

STATISTICS RECENTLY PUBLISHED by the National Automobile Chamber of Commerce, Inc., together with a few conservative estimates by THE INDIA RUBBER WORLD, show the remarkable growth of the rubber tire industry during the major part of the war period and the check placed upon its nominal development after the United States joined the conflict.

That the phenomenal growth of the United States tire output is due chiefly to the enormous and steadily increasing use of the automobile for both business and pleasure is indicated by the motor vehicle registration for recent years and the fact that about 2 per cent. of the product is being exported. The United States consumes practically its entire tire product.

AMERICAN MOTOR VEHICLE REGISTRATION.

Year	1913.	1914.	1915.	1916.	1917.	1918.
Cars	1,254,971	1,711,339	2,445,664	3,512,996	4,983,340	6,146,617

Assuming five tires per car as the average annual consumption the American demand for tires has grown from about 6,275,000 in 1913 to nearly 31,000,000 in 1918, or to nearly five times that of 1913.

AMERICAN TIRE AND TUBE PRODUCTION.

During the past six years the American tire and tube production, actual and estimated, has been as follows:

Year	1913.	1914.	1915.	1916.	1917.	9 Months, 1918.
Grossing out over 6 in	16,588,000	18,983,000	12,840,000	18,564,957	25,840,656	16,196,196
Tubes under 6 inches	.....	.....	.....	16,785,398	23,256,752	16,037,155
Estimated						

It will be seen that the figures for 1917, the last whole year for which complete totals are given and the last year of unrestricted production, show an increase of nearly three times over the output for 1913. At an average of \$25 per tire the value of the 1917 product was about \$646,016,400.

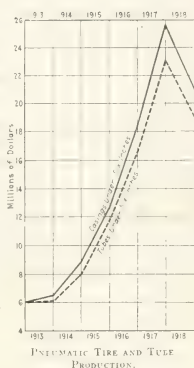
AMERICAN CRUDE RUBBER CONSUMPTION FOR TIRES.

For the manufacture of the tires and tubes mentioned above the consumption of crude rubber was as follows:

	1917.	Nine Months, 1918.
Grossing out over 6 in	162,647,482	166,586,616
Tubes under 6 in	35,704,416	4,577,986
Solid tires	5,013,672	38,641,236
Other tires and sundries	9,983,195	11,105,397
Totals	233,386,796	180,574,235

* Only the estimated total weights are available for the years 1913-1916. They are: 1913, 65,880,000 pounds; 1914, 89,830,000 pounds; 1915, 128,400,000 pounds; and 1916, 185,649,570 pounds.

In 1917 approximately 75 per cent of the rubber consumed in the United States was used for tires and tire sundries as against only 58 per cent of the crude rubber imports for the fiscal year 1913. The actual quantity of crude rubber used in 1917, the year in which tire production reached its highest mark, was fully $3\frac{1}{2}$ times that for the year 1913.



AMERICAN TIRE DEMAND FOR ORIGINAL EQUIPMENT.

Statistics of motor vehicle production in the United States indicate the increasing number of pneumatic and solid tires required annually for original equipment.

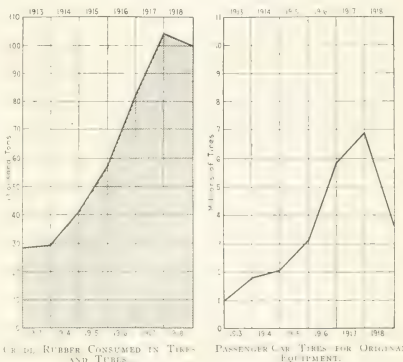
MOTOR VEHICLE PRODUCTION.

Year	Passenger Cars	Motor Trucks	Totals
1913	161,300	21,500	485,000
1914	543,679	25,375	569,054
1915	818,618	74,000	892,618
1916	1,493,617	90,000	1,583,617
1917	1,740,792	128,157	1,868,947
1918	926,388	227,250	1,153,637

Only a cursory inspection of these figures is necessary to see how the production of passenger cars and correspondingly of pneumatic tires was curtailed by the war situation of 1918, and the production of trucks and solid tires stimulated. Truck tire production for original equipment showed continuous growth during the war period and in 1918 had increased over 8½ times more than the 1913 production. Pneumatic tire production for the original equipment of cars reached its highest figure for the year 1917, when it was nearly 3¼ times the 1913 output. It is seen, therefore, that while 1,940,000 tires sufficed for new equipment in 1913, no less than 7,475,776 were required in 1917, an increase of nearly three times. Although the greater volume of increase has been in pneumatic tires under 6 inches, the greater rate of increase has been in solid and large pneumatic tires for trucks.

TIRES IN USE IN THE UNITED STATES.

Of the 6,146,617 motor vehicles registered in the United States during the calendar year 1918, some 662,000 were trucks, so that



about 8½ times as many pneumatic tires under 6 inches as truck tires were in use last year, the number of each sort, exclusive of spares and replacements, being approximately 21,938,000 pneumatics and 2,648,000 truck tires. One additional tire per car would be a conservative estimate for spares and replacements, making the totals 27,423,000 pneumatics and 3,310,000 truck tires. With nearly 31,000,000 motor vehicles tires in use it is not surprising that some 12,000 vulcanizers are kept busy with repairs and retreading.

On the basis of 20 pounds of rubber average per car for regular equipment, and one-fourth of that extra for one spare per car,

153,665,425 pounds of rubber were being used last year in American tire casings alone, an amount equal to nearly 40 per cent of the United States crude rubber imports for the fiscal year ended June 30, 1918.

UNITED STATES TIRE EXPORTS.

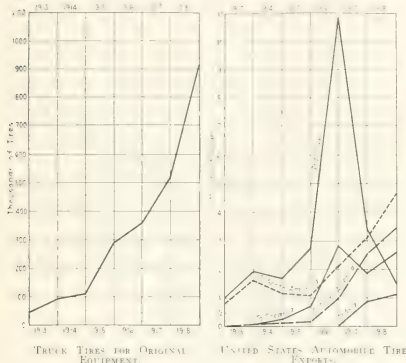
Export business has become a considerable part of the American motor tire business as shown by the following statistics compiled by the Bureau of Foreign and Domestic Commerce:

AUTOMOBILE TIRE EXPORTS.

Exports	1913.	1914.	1915.	1916.	1917.	1918.
Europe...	\$1,977,029	\$1,764,240	\$2,745,450	\$10,592,184	\$3,480,114	\$1,460,518
N. America	1,626,155	1,254,200	1,187,632	2,184,874	3,186,265	4,474,713
S. America	100,065	115,387	214,068	1,050,398	2,596,936	3,432,181
Asia...	36,711	64,177	7,849	877,880	916,890	1,354,551
Oceania...	185,807	279,327	702,877	2,896,401	1,832,244	2,662,422
Africa...	17,982	17,946	298,918	7,847	461,842	753,286

Totals...\$3,943,220 \$3,505,267 \$4,963,270 \$17,936,227 \$12,330,201 \$13,977,671

A study of these figures reveals several facts of interest, notably the continuous and remarkable growth of tire exports to South America, Asia and Africa. The average increase of busi-



ness in these three divisions was nearly 34 times, and this combined value in 1918 was 35 per cent more than the value of these exports in 1913. Exports to Oceania fell off in 1917, but the following year had nearly reached the high mark of 1916 and represented an increase of some 13 times the value of the 1913 exports. North American exports were adversely affected in 1914 and 1915, but thereafter steadily increased until in 1918 they had increased 175 per cent in value.

European exports have fluctuated greatly owing to the war. In 1914 they decreased a little, but increased considerably in 1915 and in 1916 jumped to more than five times their value in 1913, after which they declined steadily, the value of the 1918 shipments being only about 74 per cent of the 1913 value.

Total tire exports to all countries likewise fell off in 1914, but gained in 1915, jumped to about $4\frac{1}{2}$ times as much as in 1913 during 1916, dropped considerably in 1917, but showed a noticeable gain in 1918. It may be said, therefore, that except for the emergency year 1916, American automobile tire exports have shown a great and steady growth, the value of the 1918 foreign business having increased 254 per cent over that of 1913.

IT IS TO YOUR BEST INTEREST TO PUT LIBERTY BOND INTEREST IN War Savings Stamps.

THE "CONSCIENCE" OF MODERN INDUSTRY.

By G. T. Clayton.

AS MODERN BUSINESS ORGANIZATION increases in complexity, further division of responsibility and more closely defined delegation of authority must be extended or the management will become chaotic. It is being recognized more and more that one most important function in a well-organized industrial establishment is the responsibility of selection, placing, and advancement of workers. This is what we mean by the term "employment management."

Employment management goes further, however, than merely concerning itself with such selection, placement and promotion. It investigates, as part of the selection, the character, experience, and capacity of the applicant. It investigates for placement; and does not limit its investigation to the applicant. It sounds possibilities of openings for placement, and it employs every means to secure the comfort and safety of the worker and thus assists his advancement by giving him a quiet mind and an assured future.

The employment manager is really the conscience of modern industry in practical action. In the old days when employers had but few workers and themselves worked side by side with them, every worker was individually known to his boss; his idiosyncrasies were understood; his ambitions were appreciated because they were like to the boss's ambitions. But now when workers, numbered by the thousands, are employed by a collective boss who is a mere list of stockholders, living perhaps thousands of miles from the works and knowing the workers only as items of profit or loss on a ledger, some substitute for the old personal touch must be found or industry will become, first, a congeries of unrelated items in reports, and, finally, mere anarchy. If modern industry is to be well-knit; is to understand and accomplish its real purposes, it must cultivate its conscience—the employment manager.

The usual method of business organization unfortunately has so far failed to take in this function as a distinct part of factory control. The foreman should not be charged with the responsibility of selecting his gang. Good management does not require that he do so. Factory after factory has demonstrated that if the foreman's power includes that of sending back an unsatisfactory worker to the employment manager for removal and replacement, that is sufficient for purposes of discipline. But when it is considered that the cost of securing and training each worker ranges from \$10 to \$200, and averages probably more than \$60 each, a stupendous leak in the business which still clings to the antiquated foremanship hiring-and-firing method, is disclosed. Moreover, a competent employment management reduces industrial misunderstanding and friction quite noticeably. In these days, when every nerve must be strained to secure the highest possible output, no wise factory manager will ignore such a means of keeping the industrial peace.

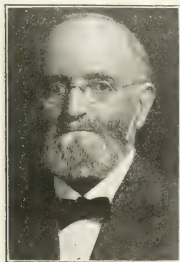
Employment management differs from public employment service. Some employers have been limiting their employment management to the status of mere labor-recruiting agencies. That work should be left to an employment agency whose function is to find the labor and sift it in a preliminary way, offering those workers who seem likely to suit to the employment manager for his more intimate knowledge of the factory's needs, his more thorough methods of selection. The employment manager cannot be dispensed with in favor of the public employment agency any more than the public employment agency in this day of national need can be evaded. It is the plainest common sense to counsel that every industrial concern immediately secure the best possible employment manager and place upon him the authority and responsibility of a direct delegate from the highest command in the establishment. With any less authority, the employment manager is almost sure to fail.

*Director, Training and Dilution Service, U. S. Department of Labor.

THE OBITUARY RECORD.

A PIONEER IN WIRE AND CABLE INSULATION.

HENRY A. REED, president of the Bishop Gutta Percha Co., of New York, died at his home in Newark, New Jersey, in his ninety-first year, on August 23, 1919. He was affected by the heat on July 4 and had been ill ever since. Mr. Reed was born in Carmel, New York, February 11, 1829. At 17 he began to teach school and to learn telegraphy, and in 1849 was put in charge of the telegraph office at Carmel, from which he was transferred to New York City and later to Poughkeepsie. There he established a bookstore also, which he kept up till 1876. Then he took up expert accounting and was employed by the Bishop Gutta Percha Works and became secretary in 1885, treasurer in 1893, and president in 1905, a position he retained until his death. Last spring the company celebrated at Newark his ninetieth birthday and at the same time the fiftieth birthday of his son, Henry D. Reed, vice-president of the company.



HENRY A. REED.

Mr. Reed was always interested in electrical science and its development. As he believed that rubber was better than gutta percha for insulation, except under water, he employed a competent engineer to design machinery to insulate wire and cables with rubber. He collaborated with the United States Light-House Board in 1887 in devising a system of lighting channels with electricity by buoys and range lights. In 1888 he designed the first high-tension cable to be used underground. He was first in America to test faults by the galvanometer.

Mr. Reed was one of the organizers of the Electric Club in New York. There he exhibited the first perfected phonograph made by Mr. Edison. He also helped to organize the Electric Trade Society and was a member of the American Institute of Electrical Engineers. He is survived by his widow, three sons and a daughter.

A FORMER WEBBING MANUFACTURER.

Horatio Nelson Starkey, an old-time elastic webbing manufacturer, died at Dedham, Massachusetts, August 16, 1919, aged 60 years. He was born in Attleboro, Massachusetts, and was the son of the late Henry C. Starkey, who was a pioneer in the elastic web business and with whom the son associated himself, afterwards succeeding him, having a factory in Chelsea, Massachusetts. His health failing, he retired from business about ten years ago. He leaves no near relatives.

ACTIVE IN RUBBER EXPLORATIONS.

Charles R. Lamson, prominent in the crude rubber trade ten or twenty years ago, died at a hospital in Beverly, Massachusetts, August 9.

Mr. Lamson was for several years stationed at Manaos, Brazil, as agent for Henry A. Gould, and later, did much exploring in Ecuador and Colombia, searching out new fields for the exploitation of crude rubber. In 1904 he was one of the party headed by Henry C. Pearson on a tour of investigation in Panama, an account of which appeared in THE INDIA RUBBER WORLD. In that series of articles he was known as "The Comodore."

In the spring of 1918, anxious to serve his country, he entered the service of the Food Administration at Washington and when that body ceased to exist he became Latin American trade ex-

pert for the United States Shipping Board, a position for which he was ably qualified by his South American acquaintance and experience.

He was taken ill in Washington early last month and arriving at his home at Beverly, was in such condition that he was taken to the hospital there, living only a few days. He leaves his widow, and one son, Charles W. Lamson, who served a year and a half in the great war with the 26th Division, returning last April.

SUBSTITUTE FOR EBONITE AND BAKELITE.

Ebonite in its various forms and kinds, such compositions as bakelite, wencajite, gallalite, eburin, rivolite, pertinax, and the like, possess a great number of properties rendering them eminently suitable for the manufacture of a great many articles.

These materials may be divided into two large groups, namely, ebonite derived from rubber and phenolformaldehyde condensation products. A new Dutch process has recently been patented in England¹ for the manufacture of a cheap product, said to combine all the good qualities of the above-mentioned materials. The following example is given to illustrate the process:

Five parts resin and three parts paraffine are added in successive quantities and are melted in ten parts by weight of boiled linseed oil. To this twenty-five parts by weight of rubber waste in a finely divided state are added. The mixture is heated and stirred until the rubber is dissolved in the pulp. It is then allowed to cool, and a mixture of the following materials is added: eight parts sulphur, ten parts infusorial earth, ten parts bone-black, three parts magnesia, and fifty parts clay. The mixture is thoroughly intermingled by the aid of a heated roller mixing mill, sheeted on the calender, then, if required, put into the mold, pressed, and finally vulcanized for a period of two hours or less with the aid of steam.

It is stated to be possible to manufacture from rubber waste a hard kind of india rubber along these new lines that possesses all the good qualities of ebonite. It is a first-rate insulating material, and, according to experiment, it even surpasses considerably in dielectric strength the insulation-resistance properties of ebonite itself; it is not combustible; it may be made in every degree of hardness, indeed a degree of hardness may be given it that materially exceeds that of ebonite; it is elastic, and may be manufactured in such a way that after having been heated adequately it assumes the shape into which it is bent, which shape is retained after cooling. However, if desired, it may be caused not to become noticeably softer or more flexible. It is admirably adapted to be worked, as by planing, milling, drilling, pressing, sawing, burnishing and polishing. It may be made in every desired color, more conveniently than can ebonite, and, in contradistinction to the latter, it is proof against the influence of sunlight. Moreover, it resists the influence of cold and even of hot oil. It is practically insoluble and indifferent to acids, alkalis, and salts. Vulcanization may be effected either with or without the use of metal molds. ("The India Rubber Journal," February 8, 1919.)

FRENCH RUBBER ASSOCIATIONS.

The *Société Financière des Caoutchoucs*, which, until recently, was the only continental rubber trust that was modeled upon the British trusts, and handled the stocks of plantations in the Malay States and in the Dutch East Indies, has split in two. One portion holds to the old name, and has transferred its headquarters from Antwerp to Brussels, with offices in Paris at 74 rue Saint Lazare. The other portion has been incorporated under the name *Société Internationale de Plantations et de Finances*. (S. I. P. E. F.) A. Berthelot is president of the Financière, and E. Bunge of the S. I. P. E. F.

¹ British patent No. 118,270.

RUBBER TRADE INQUIRIES.

THE inquiries that follow have already been answered; nevertheless, they are repeated not only in view of the needs of the trade, but because of the possibility that additional information may be furnished by those who read them. The editor is therefore glad to have those interested communicate with him.

(730.) An inquiry has been received for the address of a concern which a year or two ago manufactured and put on the market a small instrument for determining the hardness and softness of rubber.

(731.) A reader requests information as to who manufactures an electrically heated mold press.

(732.) A subscriber asks for information about a cord-lined paper for wrapping tires.

(733.) The name and address of the company manufacturing the Mathern tire-wrapping machine is desired by a tire manufacturer.

(734.) An inquiry has been received for a machine for winding bicycle tape.

(735.) A reader asks the names and addresses of stationery rubber brokers who handle rubber bands in large quantities.

(736.) The names and addresses are desired of manufacturers of automobile, motorcycle, and bicycle valves such as are used for inner tubes in foreign countries.

(737.) Request is made for the names and addresses of manufacturers of rubber strips for joining the fabric strips used in tire building.

(738.) A foreign manufacturer requests the name and address of the manufacturer of a machine for making black-and-red striped tubing.

TRADE OPPORTUNITIES FROM CONSULAR REPORTS.

Addresses may be obtained from the Bureau of Foreign and Domestic Commerce or its district or cooperative officers. Request for each should be on a separate sheet, and state number.

(29,989.) An agent in Ireland desires to represent American manufacturers of rubber, mechanical and general lines, including tires.

(30,012.) A man in Mesopotamia, expecting to purchase if suitable, desires quotations f. o. b. American port, on up to fifty, fifteen-hundredweight autocar lorries with pneumatic tires and a proportion of spares.

(30,015.) A company in Switzerland wishes to secure the agency for the sale of rubber tires. Quote f. o. b. New York or c. i. f. French or Italian ports. Correspondence may be in English.

(30,017.) The representative of an English firm is in this country to secure agencies for the sale of rubber-making machinery.

(30,036.) A firm in Norway desires the agency for the sale of rubber and rubber goods. Quote c. i. f. Norwegian port. Correspondence may be in English.

(30,042.) The representative of an English firm is in this country and wishes to purchase and to secure the agency for the sale of rubber goods in Siberia.

(30,088.) The purchase and agency is desired by a man in Czechoslovakia for rubber tires, weight immaterial, millimeter dimensions 815 by 105, 820 by 120, 880 by 120, 895 by 120, 760 by 100, and 710 by 100, for touring cars and motor trucks. Two carloads are needed at once.

(30,118.) A manufacturing and wholesale firm in Sweden desires to purchase rubber, reclaimed rubber, rubber goods, machines, tools and appliances for facilitating preparatory as well as finishing processes of manufacturing plants for rubber goods.

(30,133.) The purchase and sole agency is desired by a firm in Czechoslovakia for the sale of rubber tires. Payment to be made in United States currency.

(30,134.) An importing firm in Sweden desires the purchase

of a heavy footwear, on own account and on commission.

(30,216.) A wholesale dealer in the Netherlands desires to receive quotations from manufacturers for the purchase of rubber duck. Samples of the goods desired and may be examined at the Bureau or its district offices. (Refer to Miscellaneous Exhibit No. 207.) Correspondence may be in English.

(30,348.) The purchase is desired by a firm in Belgium of articles in India rubber. Quotations should be given c. i. f. Belgian ports. Terms cash or short term credit. Correspondence may be in French.

(30,393.) An importing company in India desires to come into direct touch with manufacturers of solid tires for busses and pneumatic tires for pleasure cars.

(30,406.) The representative of an automobile sales company in New Zealand is in the United States for a short time, and desires to secure an agency for the sale of rubber tires.

(30,411.) A firm in Spain desires to purchase balata belting. Correspondence may be in English.

(30,429.) An American who is established in France desires to secure agencies for the sale of tires.

(30,431.) A man from Denmark who is in the United States for a short time wishes to secure an agency for the sale of rubber shoes.

(30,445.) A merchant in South Africa desires to receive catalogs, prices and samples of fountain pens and druggists' sundries.

(30,446.) An importer in Switzerland desires to purchase and secure an agency for the sale of tires. Correspondence may be in English.

COLONEL COLT'S INVENTIVE ANCESTOR.

A BIT OF INTERESTING HISTORY centres about the old-time wood-cut here reproduced. It pictures 14-year-old Samuel Colt, for whom Colonel Samuel P. Colt was named. The boy is shown aboard ship fashioning a model of the revolver of which he was the inventor. Very adventurous and pre-



(American Art Association.)

THE BOY COLT INVENTING THE REVOLVER.

cocious, he had run away to sea when only ten years old. After seeing the world and inventing the revolver, he returned home, secured patents and later founded the great fire-arm company that bore his name. Incidentally, during the Civil War he invented an insulating compound and did considerable in wire insulation.

PACIFIC-FAR EAST FREIGHT TARIFF NO. 16-D.

New rates for freights from Pacific ports to the Far East, namely Hongkong, Shanghai, Kobe, Yokohama and Manila, have been issued by the United States Shipping Board, effective August 15. Boots, shoes and rubbers are 45 cents per cubic foot; pneumatic tires, 31¼ cents; and solid tires 25 cents. Junk, including old rubber, \$1 per hundredweight or 50 cents per cubic foot.

Activities of The Rubber Association of America.

THE ACTIVITIES OF THE RUBBER ASSOCIATION were necessarily curtailed to some extent during the month of August because of the general midsummer dullness and vacations, resulting in difficulty to secure representation for the meetings.

ASSOCIATION HAS FREIGHT RATE EXPERT.

R. H. Goebel, who has had many years' service with joint freight rate and tariff organizations of the railroads, particularly in the East, has been secured by the Association as a freight rate expert. The Association will now be in a position to render assistance of an executive nature to its members in connection with freight traffic problems. These primarily relate to changes in rates and classifications involving maintenance of rate levels, and rate advances to members who have not felt justified in building up their own traffic organizations. This work may include analysis of rate conditions with respect to sales distribution and general information regarding traffic or transportation details.

DOCKETS FOR ALL DIVISION AND OTHER GENERAL MEETINGS.

A plan which was found to be very practicable and conducive to a more businesslike procedure in the meetings of the Traffic Division will be put in operation at future meetings of divisions of the Association.

It consists in the preparation of an informal typewritten docket of subjects requiring the attention of division meetings, covering as briefly as possible a statement of the matter involved. This plan makes it possible to conduct the meeting in a more orderly manner and enables members to take with them or have sent to them by the secretary after the meeting this summarized record of the subjects considered, which will be supplemental to the regular minutes that are mailed from the association office.

Furthermore, it will be of assistance to the association office in its endeavor to become of greater value to the industry by keeping closely in touch with the subjects in which the several divisions are interested.

To make this arrangement useful it is necessary that the association office be advised, prior to any meeting, of the subjects which members desire to have brought before the meeting for discussion, but it is not contemplated that only matters which are included in the informal docket will be given consideration because there will always be opportunity for the presentation of any matter of interest at the time of the meeting.

MEETING OF SPECIFICATION COMMITTEE OF OLD WAR SERVICE COMMITTEE.

A meeting of the Specification Committee of the old War Service Committee, of which Dr. Geer is chairman and N. S. Noble, Secretary, was held at the offices of The B. F. Goodrich Co. on August 8. Preliminary steps were taken toward organizing the Specification Committee as a permanent branch of the association in order to put it on a more substantial footing, as it was felt that there was a real field for the work it might do.

Positive action was taken with respect to the working out by the Specification Committee with the United States Railroad Administration and other departments of the Federal Government of standard specifications for certain items in the mechanical goods line.

"CLEARSKIN" RUBBER SPONGES.

Following the usual procedure which makes the office of the Rubber Association the medium for disseminating advice of this sort, The Miller Rubber Co., Akron, Ohio, has announced that it has registered at Washington the coined word "Clearskin," to be applied to rubber sponges of their manufacture.

ASSOCIATION'S TWENTIETH YEAR BOOK.

Work on the Association's Twentieth Year-Book is progressing as rapidly as possible. The publication is already long overdue as a result of a change in organization and other circumstances which could not be controlled.

ARBITRATIONS.

Only one arbitration proceeding was conducted during August, and that involved alleged non-fulfillment of contract conditions in respect to a specified time delivery. The arbitrators' award was in favor of the seller of the crude rubber and to the effect that the terms of the contract had been complied with.

MEETING OF RUBBER CLOTHING MANUFACTURERS' DIVISION.

A call has been issued for a meeting of the Rubber Clothing Manufacturers' Division at the Yale Club, New York City, September 4. The feeling is evident that the present state of affairs in the trade makes it desirable that the general situation be reviewed and an interesting meeting is looked for.

MEETING OF RUBBER RECLAIMERS' DIVISION.

An endeavor is being made by the officers of the Rubber Reclaimers' Division to arrange for a day's outing in connection with the next meeting of that division, which is contemplated for Tuesday, September 9. The proposal is to spend the day at one of the prominent Long Island Clubs, where the meeting might be held in the morning, upon arrival, and the remainder of the day spent at golf, tennis, bathing, etc., for which the facilities of the club are unusually fine. If, however, the outing idea is found to be impracticable, the meeting will be held September 9, at the Yale Club, New York City. A general discussion of trade conditions is contemplated.

MEETING OF PNEUMATIC TIRE MANUFACTURERS' DIVISION.

There is in contemplation a meeting of the Pneumatic Tire Manufacturers' Division to be held about the middle of September, but it is not yet possible to decide upon the date. There are an unusual number of important subjects involving trade principles and practices which will come before the division for consideration and the meeting will doubtless be an interesting one.

FEDERAL EXCISE TAX. RECENT RULINGS BY THE TREASURY DEPARTMENT.

NEW YORK, July 26, 1919.

To the firm members of the Rubber Association of America:

The following rulings have just been released by the Treasury Department:

TREASURY DECISION NO. 2893. APPROVED JULY 17, 1919.

(1) ARTICLES (CONSIGNED TO RETAILER)—The last sentence of Article 8 of Regulations 47 is hereby amended to read as follows:

"Where a manufacturer consigns articles to a retailer, retaining ownership in them until they are disposed of by the retailer, the manufacturer must pay the tax upon the basis of the manufacturer's selling price on all goods sold to the retailer, as shown by reports to be procured by him monthly from the retailer."

(2) TIRES, INNER TUBES, PARTS, OR ACCESSORIES: Article 14 of Regulations 47 is supplemented by adding thereto the following:

"The words 'tires, inner tubes, parts, or accessories' shall be understood to embrace only such tires, inner tubes, parts, or accessories as have reached such a stage of manufacture that they constitute articles commonly or commercially known as 'tires, inner tubes, parts, or accessories,' and shall not be understood to embrace raw materials used in the manufacture of such articles. Unvulcanized sheet rubber, liquid vulcanizate, rubber cement, and friction fabrics are considered to be raw materials and are exempt from tax."

(4) PARTS OR ACCESSORIES: Article 16, Regulations 47 is supplemented by adding thereto the following:

"Parts or accessories for automobile trucks, automobile wagons, other automobiles, or motorcycles primarily intended for use on, or in connection therewith, when sold for use on other vehicles are not taxable provided the purchaser files with his order a statement that such parts or accessories are to be used on or in connection with another article of motor vehicle equipment not included in section 47, (2), (3), or (4) of Section 900. For example, a self-storing air pump adaptable for use on an automobile, if sold to a manufacturer of motor boats, such manufacturer stating in his order that it is to be used in the manufacture of motor boats and not upon an automobile, is not taxable."

TREASURY DECISION 2897. APPROVED JULY 22 1919. TAX APPLIES TO SALES TO STATES OR POLITICAL SUB-DIVISIONS THEREOF.

T. Collectors of Internal Revenue and Officers Concerned.

Under the provisions of the Act approved March 1, 1917, certain fixtures, products, and importers are declared to be subject to the same tax imposed on States and political subdivisions thereof upon sales made for a State or a political subdivision thereof as the tax levied on such sales (1101, c. 1, § 1, 1917).

In accordance with the above opinion, manufacturers, producers, and importers are subject to excise tax under Section 600 of the Revenue Act of 1917, and Section 900 of the Revenue Act of 1918 upon all sales of taxable articles made to States or political subdivisions thereof except where specifically exempt from such sales, as under Sub-division (10) of Section 900 of the Revenue Act of 1918. In addition to liability to tax under the above sections, manufacturers, producers, importers and vendors are held to be liable to tax upon all sales of taxable articles made to States or political subdivisions thereof under Section 313 of the Revenue Act of 1917, and under Sections 628, 902 and 905 of the Revenue Act of 1918; and lessors of positive motion picture films containing pictures ready for projection are subject to tax upon amounts received from the leasing of such films to States or political subdivisions thereof under Section 906 of the Revenue Act of 1918. Where an excise tax is imposed directly upon the vendor as under Sections 904 and 907 of the Revenue Act of 1918, sales to States or political subdivisions thereof are exempt from tax.

Article 10 of Regulations 47 is amended to read as follows:

Article 10—Sales to the Government or a state: The tax applies to articles enumerated in Section 900 when sold to the Government. Where, however, the Government supplies a manufacturer with all materials and parts, except a small portion furnished by the manufacturer under a contract stipulating that the manufacturer shall be guaranteed a certain profit, no tax is payable because the manufacturer does not sell the article. Articles manufactured in plants taken over and operated by the Government are not subject to the tax. The tax also applies to articles enumerated in this section, except to those sold under Sub-division (10), when sold to a state or political subdivision

thereof even though that they are to be paid for entirely out of public moneys and are to be used in carrying on governmental operations.

A. L. VILES, General Manager.

FEDERAL EXCISE TAX—TAXABILITY OF RADIATOR, AIR, PUMP AND GASOLINE HOSE, GENERATOR TUBING, BRAKE-BAND LININGS, AND PACKING.

NEW YORK, August 25, 1919.

To the firm members of The Rubber Association of America, Inc.:

The Rubber Association is advised that the following letter was recently sent out by the office of the Commissioner of Internal Revenue:

Referring to your letter regarding the taxability of radiator, air pump and gasoline hose, generator tubing, brake-band linings, and packing, under Section 900, Subdivision (3), of the Revenue Act of 1918:

Brake-band linings, packing and gasoline hose have been held to be subject to tax as automobile parts or accessories under Section 900, Subdivision (3), of the Revenue Act of 1918. Generator tubing, and air pump and radiator hose are not subject to tax as automobile parts or accessories unless specially designed, cut to length, and equipped with fittings making the hose available only for use on or in connection with automobiles.

It will be noted that it is held in the above letter that the hose in question is not subject to the tax unless specially designed, cut to length, and equipped with fittings making the hose available only for use on or in connection with automobiles.

A. L. VILES, General Manager.

MANUFACTURERS WHO HAVE SIGNED THE AGREEMENT.

The following-named manufacturers, members of The Rubber Association of America, Inc., have signed the agreement to pay to the Association through importers the fee of 3 cents per hundredweight on all crude rubber purchased by them.

- | | | | |
|--|-------------------------------------|--|-------------------------------------|
| A. | E. | L. | R. |
| Aemie Rubber Mfg. Co., The | Eagle Rubber Co., The | Lancaster Tire & Rubber Co., The | Racine Auto Tire Co. |
| Acushnet Proctor Tire Co., Inc. | Easthampton Rubber Thread Co. | Lea Tire & Rubber Co. | Ravenna Rubber Co., The |
| Advance Rubber Co. | Electric Cable Co., The | Lion Tire & Rubber Corp., The | Raybestos Co., The |
| Ajax Rubber Co. | Electric Hose & Rubber Co. | Long-Wear Rubber Corp., The | Ray Tire & Rubber Co. |
| Amazon Rubber Co., The | Elkhart Rubber Works | Lowell Manufacturing Co. | Reading Rubber Mfg. Co. |
| American Hard Rubber Co. | Empire Tire & Rubber Corp. | Luzerne Rubber Co., The | Republic Rubber Corp., The |
| Apsley Rubber Co. | Essex Rubber Co. | | Reich Hide Rubber Mfg. Co. |
| Archer Rubber Co. | Eureka Rubber Mfg. Co., Inc. | M. | Roberts Rubber Co., Weldon. |
| Archer Tire & Rubber Co. | | McCreary Tire & Rubber Co. | Rosenwald & Weil |
| Armstrong Rubber Co., Inc., The | F. | McGraw Tire & Rubber Co., The | Rubber Products Co., The |
| Avon Sole Co. | Faber Rubber Co., Eberhard | McIntire Tire & Rubber Co. | Ryan Ideal Stain & Blacking Co. |
| B. | Falls Rubber Co., The | Marathon Tire & Rubber Co., The | S. |
| Batavia Rubber Co., The | Faulstich Rubber Co., The | Marion Tire & Rubber Co. | Samson Tire & Rubber Corp. |
| Beacon Rubber Co., The | Featheredge Rubber Co. | Massillon Rubber Co., The | Savage Tire & Rubber Co. |
| Beacon Falls Rubber Shoe Co. | Federal Rubber Co., The | Meade Rubber Co. | Schacht Rubber Mfg. Co. |
| Beaumont Tire Co., Inc. | Firestone Tire & Rubber Co. | Mercer Rubber Co. | Schwarzwaelder Co., The |
| Beasaw Tire & Rubber Co., The | Fisk Rubber Co., The | Michelin Tire Co. | Seamless Rubber Co., Inc., The |
| Bishop Gutta-Percha Co. | | Miller Rubber Co., The | Simplex Wire & Cable Co. |
| Boston Belting Corporation. | G. | Mishawaka Woolen Manufacturing | Sioux City Tire & Mfg. Co. |
| Boston Blacking Co. | Gates Rubber Co. | Mohawk Rubber Co., The | Somerset Rubber Reclaiming Works |
| Boston Woven Hose & Rubber Co. | General Rubber Co. | Monarch Rubber Co., The | Spaulding & Bros., A. G. |
| Bounin Rubber Co. | General Tire & Rubber Co., The | Mystic Rubber Corp. | Sprague Tire & Rubber Co. |
| Braender Rubber & Tire Co. | Giant Tire & Rubber Co. | N. | Stamford Rubber Supply Co., The |
| British-American Mfg. Co. | Globe Rubber Tire Mfg. Co. | National Rubber Co. | Standard Four Tire Co. |
| Brunswick-Balke-Collender Co. | Goodrich Co., The B. F. | National Rubber Corp. | Standard Underground Cable Co. |
| C. | Goodyear Rubber Co. | National Rubber Corp. | Star Rubber Co., The |
| Cambridge Rubber Co. | Goodyear Rubber Insulating Co. | Needham Tire Co. | Sterling Tire Corp. |
| Canadian Consolidated Rubber Co., Inc. | Goodyear Tire & Rubber Co., The | Newark Rubber Co. | St. Munro Mfg. Co., of America. |
| Cantfield Company, The H. O. | Goodrich Tire & Rubber Co., The | New Jersey Car Spring & Rubber Co., Inc. | Stowe Wood Mfg. Co. |
| Canton Rubber Co., The | Gregory Rubber Co., The | New York Insulated Wire Co. | Strauss Rubber Co., Archer |
| Carlsile Cord Tire Co. | | New York Machel Clothing Co. | Surety |
| Carlsile Tire & Rubber Co. | H. | Norwalk Tire & Rubber Co., The | Swinehart Tire & Rubber Co., The |
| Carr Rubber Co., The S. | Habirshaw Electric Cable Co., Inc. | O. | T. |
| Century Rubber Works | Hale Rubber Co., Alfred. | Oak Rubber Co., The | Thermoid Rubber Co. |
| Century-Plainfield Tire Co. | Hamilton Rubber Mfg. Co. | O'Bannon Corp. | Traun Rubber Co. |
| Chicago Rubber Clothing Co. | Hardman Rubber Corp. | Omo Manufacturing Co., The | Twin Tube & Rubber Co. |
| Cleopawa Rubber Co. | Hawthaway & Sons | Okonite-Hermuth Co., The | Tyler Rubber Co. |
| Cincinnati Rubber Mfg. Co., The | Hawkeye Tire & Rubber Co., The | Owen Tire & Rubber Co., The | U. |
| Clifton Manufacturing Co. | Hazard Manufacturing Co. | P. | United & Globe Rubber Co. |
| Columbia Tire & Rubber Co., The | Hewitt Rubber Co. | Panther Rubber Manufacturing Co. | |
| The Combination Rubber Mfg. Co., The | Hodgman Rubber Co. | Parker, Stearns & Co. | Van Cleaf Bros. |
| Continental Rubber Works. | Hood Rubber Co. | Partridge Rubber Co., Ltd., The | Victor Balata & Textile Belting Co. |
| Converse Rubber Shoe Co. | Hove Rubber Co. | Phoenicia Rubber Co., The | Victor Rubber Co., The |
| Corona Rubber Mfg. Co. | I. | Phoenix Rubber Co., The | Voodies Rubber Mfg. Co. |
| Cortland Tire & Rubber Co. | Indiana Rubber & Insulated Wire Co. | Pines Rubber Co., Inc. | Vulcan Proofing Co., The |
| Crescent Insulated Wire & Cable Co. | Inland Rubber Co. | Pioneer Rubber Mills. | Vulcanized Rubber Co., The |
| D. | International India Rubber Corp. | Plymouth Rubber Co. | W. |
| Davidson Rubber Co. | J. | Polack Tire & Rubber Co. | Western Reserve Rubber Co., The |
| Davol Rubber Co. | Jenkins Rubber Co. | Polson Rubber Co., The | Western Rubber Co. |
| Dayton Rubber Mfg. Co. | K. | Porter Rubber Co., The | Whitall Tatung Co. |
| Deleon Tire & Rubber Co. | Kufman Rubber Company, Ltd., The | Portland Rubber Mills | White Dental Mfg. Co., The S. S. |
| DeMott Rubber Works, Inc., Eugene | Kelly-Springfield Tire Co. | Q. | Whitehead Bros. Rubber Co., The |
| Dumas Rubber & Tube Co. | Keystone Rubber Mfg. Co. | Quabaug Rubber Co. | Whitney Blacking Co. |
| Dreyfus Co., L. A. | Kleinert Rubber Co., I. B. | Quaker City Rubber Co. | Worthington Ball Co., The |
| Dryden Rubber Co. | Kokomo Rubber Co. | | |
| DuPont Fabricoid Co. | | | |
| Dural Rubber Corp. | | | |
| Duratex Co., The | | | |

News of the American Rubber Industry.

DIVIDENDS.

THE American Zinc, Lead & Smelting Co., St. Louis, Missouri, and New York City, declared its regular quarterly dividend of \$1.50 per share, payable August 1, 1919, on preferred capital stock of record July 28, 1919.

The Brunswick-Balke-Coller Co., Chicago, Illinois, declared its regular quarterly dividend of one and three-quarters per cent, payable August 15 on stock of record July 25, 1919.

E. I. du Pont de Nemours & Co., Wilmington, Delaware, declared a dividend of one and one-half per cent, payable July 25 on its debenture stock of record July 10, 1919.

The General Electric Co., Schenectady, New York, has declared its quarterly dividend of two per cent, payable October 15 on stock of record September 15, 1919.

The B. F. Goodrich Co., Akron, Ohio, declared a quarterly dividend of \$1.75 per share, payable October 1 on preferred stock of record September 19, 1919.

The Goodyear Tire & Rubber Co., Akron, Ohio, declared its quarterly dividend of three per cent, payable September 1 on stock of record August 15, 1919.

The Hood Rubber Co., Watertown, Massachusetts, declared a quarterly dividend of \$1.75 per share, payable August 1 on preferred stock of record July 21, 1919.

The Manufactured Rubber Co., Philadelphia, Pennsylvania, declared its quarterly dividend of one and one-half per cent, payable July 28 on stock of record July 23, 1919.

FINANCIAL NOTES.

The B. F. Goodrich Co. has more than doubled the asset value of its common stock in three years, entirely from earnings. On December 31, 1918, total assets amounted to \$107,916,441. Deducting \$57,798,001 for good will and patents, \$16,770,900 current liabilities, \$8,347,540 reserves, etc., and \$25,000,000 preferred stock there remained \$33,321,986 balance of assets behind the common or more than \$55 a share. At the close of 1915 total assets were \$94,722,634. Good will and patents were then carried at \$58,219,992, current liabilities \$4,402,642, reserves, etc., \$4,100,000 and preferred stock \$28,000,000. Deducting these items there remained \$12,363,598 or about \$20 a share as the asset value of the \$60-000 common outstanding.

For the six months ended June 30 last, net profits after all charges but before federal taxes were \$7,700,000. For the corresponding period last year net profits before taxes were \$7,150,000. At the current rate, earnings for the full year would approximate \$15,500,000, which after preferred dividends would be equal to more than \$21 a share on common before taxes.

* * *

Firestone Tire & Rubber Co. is expected to show gross sales for the fiscal year ending October 31, 1919, of upwards of \$90,000,000, which would compare with \$75,801,000 for the 1917-1918 year.

Net profits after depreciation, but before Federal taxes, will probably approximate \$10,000,000, which would be equal to about \$27 a share on the 350,000 shares of common stock after preferred dividends. Firestone sales have come up from \$7,462,000 in 1910-1911.

* * *

The listing last month of The Fisk Rubber Co.'s shares on the New York Stock Exchange is a testimonial to the rapid advance in financial and industrial power of the Springfield company. Four years ago Fisk produced 1,000,000 tires and tubes a year. This year the production will be 2,000,000. In 1915 sales were \$16,203,283 and net profits \$1,791,579. Estimated sales for 1919 are \$45,000,000 and net profits, \$4,250,000. Including sales of the

Federal Rubber Co., subsidiary, the Fisk system should turn over \$60,000,000 this year.

* * *

Net earnings of the United States Rubber Co. for the six months from January 1st to June 30th, 1919, after deducting all interest charges and after allowing for depreciation, Federal taxes and reserves, were \$10,815,750.33.

* * *

Brunswick-Balke-Coller Co. reports sales for six months ended June 30, of \$10,061,375, against \$5,327,136 a year ago.

* * *

The Miller Rubber Co., Akron, Ohio, has just sold \$1,000,000 worth of preferred stock, and its directors recently passed a resolution approving the sale of approximately \$800,000 worth of common stock. This makes the total capitalization of the company as follows: First preferred, \$7,500,000; second preferred, \$3,000,000; and common, \$10,000,000.

MADISON TIRE AND RUBBER CO., INC.

The authorized capitalization of the Madison Tire & Rubber Co. will be \$2,000,000 eight per cent preferred stock (par value \$100) and 120,000 shares of common stock (of no par value). Of this there will presently be issued all of the preferred stock and 86,600 shares of the common. The preferred stock shares are convertible at option of the holder at any time until July 1, 1929, into common stock shares of the company, share for share, at par.

The company starts business with net assets of \$3,500,000 and plant capacity daily of 1,200 tires and 2,000 tubes.

In the distribution of its product the company will be represented in practically all important cities in the country.

The officers are: Rudolph A. Low, president; Theo. W. Bassett, vice-president; Max Loewenthal, treasurer; and Clarence H. Low, secretary.

RUBBER COMPANY SHARE QUOTATIONS.

The following rubber stock quotations on August 20, 1919, are furnished by John Burnham & Co., 41 South La Salle street, Chicago, Illinois:

	End	Asked
Ajax Rubber Co.	100%	102%
Firestone Tire & Rubber Co., common	165	175
Firestone Tire & Rubber Co., preferred	98	101%
Fisk Rubber Co., The, common	44	46
Fisk Rubber Co., The (new), 1st preferred	98	101
Fisk Rubber Co., The, 2nd preferred	160	175
Goodrich Co., The B. F., common	76%	77%
Goodrich Co., The B. F., preferred	102%	104%
Goodyear Tire & Rubber Co., The, common	125	145
Goodyear Tire & Rubber Co., The, 1st preferred	105	107
Goodyear Tire & Rubber Co., The, 2nd preferred	106%	108
Kelly-Springfield Tire Co., common	125	127
Kelly-Springfield Tire Co., preferred	95	97
Lee Tire & Rubber Co.	29%	30%
Marathon Tire & Rubber Co.	29%	35
Miller Rubber Co., The, common	214	222
Miller Rubber Co., The, preferred	103	106
Rubber Products Co.	145	151
Portage Rubber Co., common	143	148
Swincairt Tire & Rubber Co.	85	90
United States Rubber Co., common	128%	129%
United States Rubber Co., preferred	116%	117%

FOUR YEARS OF INDUSTRIAL EXPANSION

During the four-year period from December 31, 1914, to December 31, 1918, the 104 leading American industrial companies, despite heavy expenditures for new construction and acquisitions, and record-breaking dividends, added a total of nearly \$2,000,000,000 to their working capital, most of it from surplus earnings.

This explains in large measure the material appreciation in the market value of industrial securities, yet many are still sell-

ing far below their respective intrinsic value based upon actual addition to asset value over the last four years.

Rubber and tire companies prospered during the war, and their expansion still continues. The B. F. Goodrich Co. increased its working capital from \$19,037,977 in 1914 to \$43,024,619 in 1918, a gain of 125 per cent, and the surplus after dividends was equivalent to \$55.52 a share. The Goodyear Tire & Rubber Co. increased its capital from \$10,724,323 to \$55,655,663, a gain of 418 per cent, and the surplus after dividends was equal to \$146.44 a share. The Kelly-Springfield Tire Co. increased its capital from \$2,435,491 to \$8,382,681, a gain of 224 per cent and added \$33.45 to the value of its common stock. The United States Rubber Co. increased its capital from \$41,423,828 to \$101,552,038, a gain of 145 per cent and added \$82.70 to the value of the common stock. A large part of the increase in assets of the foregoing companies was due to new financing.

Among allied trade firms there was also much expansion. The Corn Products Refining Co. increased its capital from \$8,996,186 to \$23,896,300, a gain of 166 per cent, and the surplus after dividends was \$32.60 per share of common stock. The E. I. du Pont de Nemours & Co. increased its capital from \$35,132,736 to \$186,001,738, a gain of 429 per cent, and added \$154.16 to the value of its common stock. The General Electric Co. increased its capital from \$104,624,462 to \$189,302,514, a gain of 81 per cent, and added \$28.62 to the value of its stock. The Westinghouse Electric & Manufacturing Co. increased its capital from \$32,605,769 to \$91,322,867, a gain of 180 per cent, but the value of its common stock sustained a deficit occasioned by payment of \$15,688,992 cash and stock common dividends.

PERSONAL MENTION.

J. K. Carr, who became vice-president and general manager of the B. C. Tillinghast Rubber Co., Inc., 236 Market street, Philadelphia, Pennsylvania, at the death of the late B. C. Tillinghast, and who has ever since endeavored to combine with his duties as salesman on the road those of managing the business, has now retired, after 29 years on the road, and will devote all his time to the management of the company, with which he has been connected for 39 years.

Charles Hess, Jr., salesman for the B. C. Tillinghast Rubber Co., Inc., Philadelphia, Pennsylvania, will replace J. K. Carr on the road.

John W. Higgins, for two years general foreman of the mechanical rubber goods department of The Federal Rubber Co. of Illinois, Cudahy, Wisconsin, has resigned to accept a position with the druggists' sundries department of The B. F. Goodrich Co., Akron, Ohio.

W. W. King and H. E. King of Typke & King, Limited, Mitcham, England, dealer in rubber-makers' chemicals, were in New York City recently.

H. S. Doty, formerly chief chemist of the Manhattan Rubber Co., and during the war a member of the Gas Defense Service, is now with Frazar & Co., New York City, as head of the chemical research department.

Orlando F. Weber has been elected president of the National Aniline & Chemical Co., succeeding William J. Matheson, who has been serving as chairman of the board of directors and president of the company since 1917 as a patriotic duty during the war, and has now accordingly resigned.

George B. Allan, Texas representative of the Yarnall-Waring Co., Philadelphia, Pennsylvania, who has been located at Houston, Texas, will hereafter make his headquarters in Dallas for the sale of "Wayway" fuel-saving specialties.

Harry D. Benner has been appointed manager of the accessory sales department of The Federal Rubber Co. of Illinois, Cudahy, Wisconsin.

Frank C. Risselt, formerly with the Cameron Machine Co.,

Brooklyn, New York, has become identified with the Spadone Machine Co., 126 Duane street, New York City, manufacturer of vertical bias cutters.

CHARLES J. DAVOL.

CHARLES JOSEPH DAVOL, the president and treasurer of the Davol Rubber Co., Providence, Rhode Island, is the son of the late Joseph Davol, who, in 1870, founded the great business now conducted by that corporation.

The subject of this sketch was born in Brooklyn, New York, April 14, 1868. He was educated in the public schools of Providence, and in preparation for a college course at Brown University, attended Mowry & Goff's Ensign and Classical School, graduating in the class of 1885. Meanwhile he abandoned the idea of a professional life, and, after several months of travel, entered his father's factory, where he worked his way through the various departments, thereby acquiring a thorough knowledge of the details of both the manufacturing and executive branches of the business, and was elected general manager.

He was close confidant and assistant of his father during the last ten years of the latter's life. At his father's death in 1909, he was elected president and treasurer, which offices he continues to hold. During the years he has had the management, the business has steadily grown, the plant has been greatly enlarged, its equipment thoroughly modernized and its scope of products widened until it is claimed that the concern is the largest manufacturer in the world of fine rubber surgical, dental, stationers' and druggists' sundries, and special articles used in many arts, crafts, and professions.

Mr. Davol is a man of varied activities. He is an ardent sportsman and dog fancier, and his estate, "Wildacres," at North Kingston, Rhode Island, is a fine shooting preserve. There also are the famous Wildacres Farm Kennels, noted for their pure strain of pointers, setters, and beagles. Mr. Davol is a member of the Pointer Club of America and the English Setter Club of America, the Agawam Hunt Club and the National Audubon Association of America.

He is an enthusiastic yachtsman, and near his estate, in the land-locked harbor at East Greenwich, Rhode Island, he maintains moorings for his palatial yacht "Paragon," of the power cruiser type. He is a member of no less than seven yacht clubs, namely, New York, Eastern, Boston, Larchmont, Rhode Island, Bristol, and East Greenwich.

He is fond of travel, and having made two voyages around the world, he is a member of the Circumnavigators' Club of New York, besides the Rocky Mountain Club and the National Geographic Society. As a descendant of early American settlers he is prominent in the Society of Mayflower Descendants, Society of Colonial Wars, Sons of the American Revolution and the Rhode Island Historical Society. His affiliations with business and local organizations include the Providence Athenaeum, the Commercial Club, the Economic Club, and the Rhode Island Hospital Corporation. Besides all these he is a life member of the Navy League of the United States and the American Defense Society and a member of the National Committee. He is a director of The Rubber Association of America, Inc., and chairman of the Rubber Sundries Division of that association.



CHARLES J. DAVOL.

TRADE NOTES.

The Pennsylvania Rubber Co., Jeannette, Pennsylvania, recently made for Fred Stone, the comedian, a set of tires bearing his autograph in bright red rubber on a jet-black tread.

The Continental Rubber Co., Erie, Pennsylvania, has sent out plans and specifications for a new power plant.

The Dryden Rubber Co., Chicago, Illinois, will build a new tire plant, to have an initial capacity of 1,000 tires and 1,000 tubes daily.

The M. & W. Tire Co., Inc., 1311 Woodward avenue, Detroit, Michigan, is incorporated in Michigan for the distribution of American-Akron tires, tubes, and sundries, wholesale and retail. The officers are: George J. Moebis, president; Herbert J. Woodall, vice-president; Charles J. Woodall, secretary and treasurer. The concern has a subsidiary known as The M. & W. Tire Repair Co., at 7 Harper avenue, Detroit, whose officers are: Herbert J. Woodall, president; George J. Moebis, vice-president; Charles E. Barton, secretary and treasurer. This subsidiary does repair work in general, in addition to selling standard makes of tires and tubes.

The Majestic Tire & Rubber Co., Indianapolis, Indiana, recently incorporated in Indiana, will manufacture a high-grade cord tire to be known as "Majestic" cord, and a high-grade tube. The officers of the company are: R. H. Syfers, president; E. B. Oscars, vice-president; O. C. Pantall, secretary-treasurer; J. B. Hilliard, superintendent and production manager. The company has increased its capital from \$100,000 to \$250,000.

The Independent Tire Co., Inc., St. Louis, Missouri, has opened a branch store under the same name, at 211 East Jefferson avenue, St. Louis, and has appointed Carl J. Reifler representative in that territory.

The Eastman Rubber Works, Inc., 213 West Fortieth street, New York City, has increased its capital from \$200,000 to \$500,000.

The Virginian Rubber Co., Charleston, West Virginia, recently incorporated in that state, will manufacture pneumatic cord tires known as the "Virginian," and dipped and pressed rubber goods. The officers are: A. A. Lilly, president; Houston G. Young, vice-president; and W. D. Guyer, secretary-treasurer. The company has purchased a factory site on the Kanawha river, comprising twelve acres of land, and is having plans and specifications drawn for both building and machinery. This is in the natural gas region, which offers an additional advantage.

The Latex Tire Co., Collins Block, Fond du Lac, Wisconsin, elected the following directors and officers at its first annual meeting: F. S. Dannenberg, president; J. T. Brofka, vice-president; J. T. Jones, secretary; and Orlando J. Kohl, treasurer; directors—T. W. Meiklejohn, J. T. Brofka, J. T. Jones, Grant Lambright, F. S. Dannenberg, Edward Yockey and Orlando J. Kohl. The factory site will be at East Scott and Main streets and building activities will start at once on a two-story structure.

The Evans Tire Co., Fort Wayne, Indiana, has incorporated The Evans Tire & Reliner Co., in that state, capitalized at \$100,000, to make inner liners and skived-edge boots for vulcanizing purposes, and rebuild tires by the Evans method. R. I. Evans is president and R. O. Beecroft, sales manager.

The Keystone Tire & Rubber Co., New York City, at its annual meeting of stockholders held August 1, 1919, elected the following directors for the ensuing year: L. Walter Lissberger, Joel Jacobs, Sydney Bernheim, Nathan J. Miller, Julius Lichtenstein, Benjamin Lissberger, and Walter Loewenthal. At the organization meeting of the new board of directors, the officers of the company were also elected, as follows: L. Walter Lissberger, president; Sydney Bernheim, vice-president; Joel Jacobs, treasurer; and Walter Loewenthal, secretary.

The Goodyear Cotton Mills, Inc., Killingly, Connecticut, is offering some of its cumulative preferred seven per cent stock to employees at \$100 per share, on the instalment plan at \$1 a week, and will allow new employees to subscribe at the time of entering the company's employ. Each employee who remains

with the company is to be allowed a bonus of three per cent yearly.

The Story Rubber Corp., until recently at 1328 Broadway, New York City, has moved to a store at Broadway and Sixty-sixth street, under a long lease. All communications should be directed to the new address.

The London Rubber Co., Pittsburgh, Pennsylvania, is to be incorporated in that state in conjunction with the present business of A. L. London & Sons, manufacturers of rain coats, rubber clothes, inner tubes, etc., to manufacture high-grade tires and tubes. The officers of the new company are: A. L. London, C. M. London and H. London.

The Mohegan Tube Co., Scott avenue and Meserole street, Brooklyn, New York, is building a one-story addition to its plant, to cost about \$75,000. New equipment is also being installed in some departments, and it is hoped that the company will be able to double its present capacity. The Mohegan company is now supplying the rubber trade with heavier gage seamless tubes instead of welded tubing.

The Standard Emarex Co., 208 South La Salle street, Chicago, Illinois, has discontinued its office at 185 Madison avenue, New York City.

The L. H. Butcher Co., Inc., 100 William street, New York City, has taken a long-term lease of the five-story and-basement building at 239 Front street, where it will consolidate its office and storage facilities and be enabled to carry increased stocks of its color, mineral, and chemical specialties.

The Acme Belting Co. and the United & Globe Rubber Co. have removed their Chicago branch, under the management of Elmer E. Bast, to 23 North Franklin street, Chicago, Illinois.

The L. A. Dreyfus Co., Rosebank, Staten Island, New York, manufactures and refines rubbers and gums.

The Dunning & Boschert Press Co., Inc., Syracuse, New York, manufacturer of presses, pumps, valves, etc., has increased its capital stock from \$200,000 to \$300,000.

The Acushnet Process Co., Inc., 52 Vanderbilt avenue, New York City, has increased its capitalization by authorizing the issuance of \$195,000 worth of preferred stock to supply funds for increasing its capacity for reclaiming friction. It expects to double its capacity by the first of the year.

The Metal Hose & Tubing Co., Raymond and Tillary streets, Brooklyn, New York, has increased its capital from \$15,000 to \$300,000.

The Cupples Co., St. Louis, Missouri, will build extensive additions to its tire plant at the corner of Sixth and Spruce streets, according to plans drawn by the Osborn Engineering Co., Cleveland, Ohio.

CANADIAN NOTES.

The Canadian Consolidated Rubber Co., Limited, purposes to expend \$1,000,000 in extending the Dominion Tire Factory, at Kitchener, Ontario. Two large additions are being built, one at each end of the present structure. It is hoped to double production with the new facilities and space.

The Gregory Tire & Rubber Co., Limited, Vancouver, has been incorporated in British Columbia, at \$1,500,000 to manufacture tires, tubes and accessories, and will build a plant for this purpose. The officers are: J. A. Cunningham, president; Morton Gregory, vice-president; Frank Parsons, secretary; and S. A. Madge, treasurer.

N. S. Braden has been elected vice-president of the Canadian Westinghouse Co., Limited, Hamilton, Ontario. H. M. Bostwick succeeds him as sales manager.

J. I. Frank Anthes is establishing himself as a manufacturers' broker and agent for materials required by the rubber and leather shoe industries, his office being at 707 Drummond Building, Montreal, Quebec. Mr. Anthes has been connected with the Canadian Consolidated Rubber Co., Limited, ever since its establishment, in an executive capacity in its different footwear, mechanical, and tire factories.

UNITED STATES RUBBER CO. TO INCREASE CAPITAL STOCK.

AT A MEETING held August 7, 1919, the directors of the United States Rubber Company voted approval of several important recommendations of the chairman, Colonel Samuel P. Colt. A meeting of stockholders for ratification will be held at New Brunswick, New Jersey, September 9, 1919. Chief among the recommendations was an increase in the capital stock to \$100,000,000 first preferred, \$200,000,000 common, a total of \$300,000,000, and the retirement of the second preferred, the greater part of which has already been acquired by the company.

The present authorized capitalization is \$70,000,000 first preferred, \$10,000,000 second preferred, and \$40,000,000 common, a total of \$120,000,000. Of this there is now issued and outstanding \$63,022,100 first preferred, \$403,600 second preferred and \$36,000,000 common, a total of \$99,425,700.

During the past five years the capital stock has remained substantially the same, while the volume of business transacted by the company has been increased in round numbers as follows: \$83,000,000 in 1914; \$92,000,000 in 1915; \$126,000,000 in 1916; \$176,000,000 in 1917; \$215,000,000 in 1918.

The indebtedness of the company was funded in 1917 into long-term 5 per cent bonds. Surplus earnings for the years 1917 and 1918 were equivalent each year to about 30 per cent on the common stock, and the earnings for the first half of 1919 have been substantially the same as for the first half of 1918.

For the past two years the company has been unable to meet the demand for its tires, and notwithstanding the fact that its capacity has already been substantially increased, further construction has been authorized which will require in the neighborhood of \$15,000,000 for its completion, and which will double the present capacity.

As the amount of the present outstanding common stock compared with the property of the company is relatively small, it is proposed that \$36,000,000 of additional common stock be issued and offered to present common stockholders at par, in order to provide ample capital to meet the enlarged business of the company without the application of so large a proportion of earnings for that purpose as has been the case the past few years.

It is also recommended that dividends at the rate of 8 per cent per annum be paid upon the common stock beginning in October next, and further, that an extra distribution, either in stock or in cash, such as may be warranted under all conditions, be made early in 1920 to common stockholders.

The money to be obtained from the increased issue of stock will be used:

- (1) To pay off all current indebtedness that can be paid (certain accounts payable and acceptances will always exist).
- (2) For new construction planned and in process designed principally for the increase of the product of automobile and truck tires.
- (3) For extension of rubber plantations in the East, and to facilitate the carrying of stock under profit sharing for benefit of employees.

NEW INCORPORATIONS.

Armortec Tire Co. of New England, July 9 (Maine), \$200,000. D. O. Campbell, president, and treasurer; W. C. Bishall, secretary; F. Arnold, secretary; R. E. Hall, clerk. Principal office, Bangorville, Maine. To manufacture and deal in rubber tires, tubes, etc.

Atlas Tire Co., August 13 (Delaware), \$100,000. H. E. Harper, W. C. Hildebrand, both of Zelenople; C. C. Meeder, Pittsburgh—all of Pennsylvania. Delaware agent, Capital Trust Co. of Delaware, Dover. Delaware. To manufacture, buy and sell automobile tires and tire accessories.

Bailey Rubber Heel Co., May 22 (Massachusetts), \$75,000. M. Shuman, 1435 Commonwealth avenue, Boston; W. C. Bishall, 501 Street; F. W. Hooton, R. A. Jordan, 55 Saltonstall Road, Haverhill—all in Massachusetts. Principal office, 52 Chauncey street, Boston, Massachusetts. To manufacture, buy, and sell rubber heels and soles and rubber goods of all kinds.

Bergougan Rubber Corp., August 1 (Delaware), \$1,500,000. R. C. Bergougan, chairman of the board of directors; H. C. Coleman, president; J. Grouer, vice-president and secretary; W. Clapp, treasurer; M. Leon, general counsel. Principal office, Trenton, New Jersey. To manufacture and sell tires and other rubber products.

Cascade Tire & Rubber Co., June 7 (Ohio), \$1,000,000. J. W. Mart, president and general manager; F. M. Sharp, secretary and treasurer;

M. E. Siegel, M. Plesky and F. L. Givens, directors. Principal office, 4600 N. 10th, Columbus, Ohio. To manufacture car tires, tubes and pneumatic.

Charles Tire Co., July 28 (New Jersey), \$125,000. D. L. Powers, president, 401 West State street; F. G. Hasselman, vice-president and treasurer, 411 Lakeside street; H. P. Moore, 1000 Mercer street—all of New Jersey. Principal office, 26 West State street, Trenton, New Jersey. Agent in charge, M. G. Buchanan. To sell pneumatic tires and tubes, and automobile.

Clark Garter Co., July 25 (Massachusetts), \$35,000. B. Hochberg, 23 Johnson Road, Dorchester; A. I. Karpas, 451 Walnut avenue, Roxbury; S. Raymond, 235 Chestnut street, Chelsea—all of Massachusetts. Principal office, 235 Chestnut street, Chelsea, Massachusetts.

Forster Tire & Rubber Co., The May 18 (Ohio), \$1,000,000. H. Forster, president and treasurer; W. F. Davis, vice-president and general manager; D. W. Davies, manager of sales; M. Schuller, E. P. Gries and W. A. Mink, directors. Principal office, Millersburg, Ohio. To manufacture tires.

Garter Tire & Rubber Co., Inc., August 6 (New York), \$30,000. S. and A. Newman, 344 West 54th street, New York City; M. G. Gahler, Norristown, Pennsylvania. To manufacture tires and rubber goods.

Grand Rubber Mills, Inc., July 14 (New Jersey), \$300,000. A. C. Dug, 150 West 10th street; L. Aldrich, 37 West 10th street, both of New York City; G. Moore, 516 58th street, Brooklyn, New York. Principal office, 101 of Petrie avenue, Trenton, New Jersey. To purchase, sell, lease in and manufacture rubber.

Headland Tire Sales Co., Inc., August 15 (New York), \$15,000. J. L. Tolson, 22 Winter street; J. W. Becker, 296 Summer Place; F. L. Kuhn, 90 Locust street—all of New York City. Principal office, Buffalo, New York. To manufacture tires and tubes.

Inter State Tire Corp., June 28 (New Jersey), \$125,000. W. E. Gilmore, 119 Prospect street; H. M. Friend, 245 South Arlington avenue, both of East Orange, New Jersey; J. E. Seaton, 190 Lawrence street, Newark, New Jersey. Principal office, 16-22 Lawrence street, Newark, New Jersey; agent in charge, H. M. Friend. To buy, sell, manufacture and deal in automobile tires.

Kearney Tire Co., Inc., August 8 (Delaware), \$1,000,000. J. Kelley, 4243 North Street; M. J. Brown, 17 South Eighth street; A. Potter, 2336 East Cambridge street—all of Philadelphia, Pennsylvania. Principal office, Suite 475, Drexel Building, Philadelphia, Pennsylvania. To carry on a rubber business.

Lucy Tire & Retard Co., The, June 18 (Tennessee), \$20,000. W. M. Selzer, H. S. Wilbert, H. Goldstein, K. L. McKenzie, L. Goldstein. Principal office, Nashville, Tennessee. To deal in and retread tires.

Lyon Tire Co., January 30 (Illinois), \$5800. J. H. Stewart and others. Principal office, 401 East Monroe street, Springfield, Illinois. To deal in automobile tires.

McGraw Tire & Rubber Export Co., Inc., August 8 (Delaware) authorized capital 1,000 shares without nominal or par value. T. L. Croteau; S. E. Hill; J. M. Hoover—all of Wilmington, Delaware. Delaware agent, Corporation Trust Co. of America, Du Pont Building, Wilmington, Delaware. To manufacture and deal in tires and rubber goods of all kinds.

Madison Tire & Rubber Co., Inc., August 13 (New York), \$2,600,000. J. N. Schuchman, 100 West 42d street; H. H. Dulac, 100 West 42d street, both of Broadway—all of New York City. Principal office, 254 West 57th street, New York City.

Majestic Tire & Rubber Co., The, April 24 (Indiana), \$250,000. R. H. Sprick, president; J. M. O'Leary, vice-president; O. C. Fantall, secretary and treasurer; J. B. Hilliard, superintendent and production manager. Principal office, Indianapolis, Indiana. To manufacture car tires and tubes.

Master Tire & Rubber Co., The, August 2 (Ohio), \$300,000. W. B. Ruston, president and general manager; G. H. Witsman, vice-president and factory manager; F. C. Vail, secretary and sales manager; H. G. Egbert, treasurer and credit manager; R. N. Brumbaugh, attorney. Principal office, 506 Scowling Building, Dayton, Ohio. To manufacture car tires.

Neckart Tire & Rubber Corp., The, July 30 (Delaware), \$1,000,000. M. L. Rogers, L. A. Irwin, W. G. Singer—all of Wilmington, Delaware. Delaware agent, Delaware Registration Trust Co., 900 Market street, Wilmington, Delaware. To manufacture, buy, sell and deal in all kinds of rubber tires.

Oldham Rubber Tire Co., July 25 (Delaware), \$1,000,000. M. M. Lucey, L. N. Jennings—all of Wilmington, Delaware. Delaware agent, Colonial Charter Co., 927 Market street, Wilmington, Delaware. To manufacture, repair, vulcanize, and deal in all kinds of tires.

Owens Tire & Rubber Co., February 10 (South Carolina), \$25,000. W. C. Owen, president; J. C. Self, vice-president; W. O. Self, secretary and treasurer. Principal office, 714 Flatiron Building, Atlanta, Georgia. To carry on the business of jobbing tires and accessories.

Pike Manufacturing Co., Inc., The, August 6 (Delaware), \$100,000. C. B. Bishop, A. M. Fox, A. S. Bishall—all of Wilmington, Delaware. Delaware agent, Delaware Charter Co., 900 Market street, Wilmington, Delaware. To manufacture and deal in hose supporters.

Pioneer Rubber Co., Inc., August 13 (New York), \$50,000. R. J. Cronan, 2 Prospect Place; N. Brogan, 146 West 74th street; D. Straus, 60 Wall street—all of New York City.

Pneumatic Rubber Heel Corp., July 21 (Delaware), \$1,250,000. R. A. Van Voorhis, 205 Union street, Jersey City, New Jersey; A. R. Oakley, Pearl River; W. E. Schiele, Jr., 51 Division avenue, Brooklyn—all in New York City. Delaware agent, Delaware Registration Trust Co., 900 Market street, Wilmington, Delaware. To manufacture, purchase, and deal in rubber heels, tires, etc.

Pyramid Tire & Rubber Co., Inc., August 11 (New York), \$10,000. J. L. Larnum, 100 West 42d street; W. C. Bishall, 100 West 42d street, both of New York City. To manufacture tires and tubes for automobiles.

Reber Rebuilt Tire Co., August 6 (Delaware), \$30,000. T. L. Croteau; S. E. Hill; A. M. Hoover—all of Wilmington, Delaware. Delaware agent, Corporation Trust Co. of America, Du Pont Building, Wilmington, Delaware. To manufacture, rebuild, retread, vulcanize, and repair rubber tires and tubes.

Rebuilt Tire Co., Inc., August 5 (New York), \$10,000. C. D. Nolen, 475 Fourteenth avenue, Long Island City; E. L. Blessington, 131 Fifteenth street, Brooklyn; J. C. Gahler, 400 West 42d street, Staten Island—all of New York City. To manufacture tires and tubes.

Roussey-Centives Rubber Co., June 23 (Indiana), \$100,000. A. J. Roussey, Carl Centives, Charles Centives—all of Fort Wayne, Indiana. Principal office, Fort Wayne, Indiana. To manufacture, buy and sell tires and tubes.

Rubber Products Finance Co., July 29 (New Jersey), \$100,000. S. M. Hollander, S. Kuep, S. M. Fruchtmann—all of Newark, New Jersey. Principal office, 790 Broad street, Newark, New Jersey. Agent in charge, S. Kuep. To manufacture and sell tires, tubes and other rubber accessories for automobiles.

Speedway Tire & Rubber Co., The, August 19 (Delaware), \$100,000. W. M. Nelson, Wardman Park Hotel; H. L. Clendening, 4037 New Hampshire avenue; W. F. Roche, The Arlington Hotel—all of Washington, D. C. Delaware agent, Delaware Registration & Incorporators' Co., 927 Market street, Wilmington, Delaware. To manufacture, repair, and sell rubber goods of every description.

Squires Tire & Rubber Co., Inc., August 7 (New York), \$250,000. C. Henry Squires, president, Colson Bldg. Squires, secretary, 10th of N. Y. Ave., New York. Squires, treasurer, Richmond Hill, Long Island, N. Y. Principal office, Room 208, Queens Plaza Court Building, Long Island City, New York. To manufacture high-grade tires and rubber goods.

Tackel & Co. Rubber Co., July 17 (Delaware), \$100,000. M. L. Tackel, M. C. Kelly, S. L. Mackey—all of Wilmington, Delaware. Delaware agent, Delaware Charter Guarantee & Trust Co., Du Pont Building, Wilmington, Delaware. To manufacture automobile rims, wheels and accessories.

United Tire & Rubber Corp., August 7 (Delaware), \$500,000. H. H. Nesbit, W. G. Keen, W. F. Saltwater—all of Wilmington, Delaware. Delaware agent, G. L. Townsend, Jr., 808 Ford Building, Wilmington, Delaware. To manufacture, buy and sell tires.

Universal Wheel Corp., The, August 14 (Delaware), \$1,500,000. J. Hansmann, 210 West 44th street, H. Denton, 220 Audubon avenue, J. Newman, 251 West 80th street—all of New York City. Delaware agent, F. M. Walker, 901 Market street, Wilmington, Delaware. To manufacture and sell the wheel known as "Resilient" and to deal in tires, wheels, and other accessories for automobiles.

Vineyard Shoe Co., Inc., May 30 (New Jersey), \$20,000. G. D'Ippolito, president; L. D'Ippolito, vice-president; D. Gasper, treasurer and general manager; A. D'Ippolito, secretary. Principal office, Sixth street and Chestnut avenue, Vineland, New Jersey. Agent in charge, G. D'Ippolito. To manufacture rubber soles and heels.

Vulcanian Rubber Co., The, June 30 (West Virginia), \$1,200,000. A. A. Lilly, president; H. C. Young, vice-president; W. D. Guyer, secretary, and treasurer; A. J. Schen, W. A. Abbott, M. J. Hopkins, J. S. Baister, W. L. Burgess, W. S. Johnson, W. C. Mitchell, V. E. Vining, directors. Principal office, 111 1/2 Union Trust Building, Charleston, West Virginia. To manufacture pneumatic rubber tires and to manufacture dipped goods.

Washington Garter Corp., July 1 (New York), \$100,000. M. L. Margolis, 1387 Clay avenue, all of New York City. To manufacture garters.

Whitcomb Tire & Rubber Co., July 24 (Delaware), \$100,000. M. C. Kelly, S. L. Mackey, J. D. Frock—all of Wilmington, Delaware. Delaware agent, Delaware Charter Guarantee & Trust Co., Du Pont Building, Wilmington, Delaware. To manufacture automobile tires.

BERGOUGNAN TIRES IN AMERICA.

French capitalists, owners of Etablissements Bergougnan, with factories in Clermont-Ferrand, France, Moscow, Russia, Turin and Italy have purchased the plant of the Delton Tire & Rubber Co., Trenton, New Jersey, the firm to be known as the Bergougnan Rubber Corporation, of Trenton. The company's office is at 49 West 64th street, New York city.

Plans for additions are rapidly going forward and forty acres of land have been purchased for new factory buildings.

RETURNS TO THE TIRE BUSINESS.

WILLIAM MACKONE MILNER, for several years connected with rubber trade publications, has resigned the editorship of "The Rubber Age and Tire News," and gone into the manufacture of motor tires.

Mr. Milner was born in Lafayette, Indiana, June 3, 1887, and there received his early education, but removing to Europe in his youth, he attended colleges in England and France. Having a command of several languages, he was first connected with a tourist agency in London, but resigned to become a salesman of automobile specialties, tires and mechanical rubber goods.

Returning to this country in 1914, he was for a time connected with the automobile and motor truck industry, and a year or so later he became a member of the editorial staff of THE INDIA RUBBER WORLD. Later, after a short time in the automobile business, he was assisted in establishing "The Rubber Age and Tire News," of which he became the editor.

He now becomes assistant general sales manager of the American branch of the Bergougnan Rubber Corporation, the well-known French tire manufacturing concern, which has acquired the plant of the Delton Tire & Rubber Co., at Trenton, New Jersey. Mr. Milner's duties will be largely the establishing of agencies and branch stores for the Bergougnan tires throughout the United States. His many friends in the trade wish him success in his new position.

A RECORD BELTING ORDER.

The largest single order for belting which has ever been shipped by The B. F. Goodrich Co., Akron, Ohio, was for the



A RECORD SHIPMENT OF GOODRICH BELTING.

Northern Central grain elevators at Canton, near Baltimore, Maryland, owned by the Pennsylvania Railroad Co. The shipment shown here on the traction trains leaving the factory, aggregated 44,594 feet of belting, approximately 8 1/2 miles, and weighed about 131 tons.

"CRUDE RUBBER AND COMPOUNDING INGREDIENTS" AND "RUBBER MACHINERY," by Henry C. Pearson, should be in the library of every progressive rubber man.



TRENTON PLANT OF THE BERGOUGNAN RUBBER CORP.

The present plant is now turning out about 350 tires a day, and the capacity will be increased to 5,000 daily. Later the company plans to manufacture solid tires also.

The officers of the company are: Herbert H. Coleman, of East Orange, New Jersey, president; W. A. Clapp, East Orange, treasurer, and Jean Grenier, of Trenton, vice-president and general sales manager. The directors of the company, besides the officers, are: John E. Thropp and Peter D. Thropp, of Trenton, and Jules Berthier, L. Larrouze and Raymond Bergougnan, of Clermont-Ferrand, France.

THE RUBBER TRADE IN OHIO.

By Our Special Correspondent.

AKRON NOTES.

THE B. F. GOODRICH Co., Akron, has appointed F. O. Slutz manager of its railroad sales department, succeeding C. M. Woodruff, resigned. Mr. Slutz has been with the Goodrich company 18 years, the last ten of which has been in the mechanical sales department.



F. O. SLUTZ.

The B. F. Goodrich Co., Akron, has completed the last order for war balloons. During the war its balloon department produced seven balloons a day and employed about 1,300 people. The company also produced 14 dirigibles, 362 observation balloons and 13 supply balloons during the war.

The fourth annual outing of The B. F. Goodrich Co. will be held at Liberty Park, Akron, on Labor Day. The Goodrich band will furnish music and a program is being arranged for athletic events for both men and women, with suitable prizes for the winners.

The B. F. Goodrich Co., Akron, has suspended its Americanization classes for the four weeks ending September 5, the autumn opening being on Monday, September 8. Over 1,500 Goodrich employees have availed themselves of the opportunity to enroll in these classes during the last eight months.

Employees of The Miller Rubber Co., Akron, held their annual picnic at Summit Beach Park on August 2. Several thousand attended and the program of entertainment included speeches, games and other amusements.

Harvey S. Firestone, president of the Firestone Tire & Rubber Co., Firestone Park, Akron, spent the first three weeks in August in the Adirondacks with Thomas A. Edison, John Burroughs and Henry Ford, accompanied by his son, H. S. Firestone, Jr.

C. W. Seiberling, vice-president of The Goodyear Tire & Rubber Co., Akron, has offered a gold and bronze cup, 24 inches high, as a trophy to be presented to the Industrial League team winning the baseball championship of Akron this year.

CLEVELAND NOTES.

L. A. Llewellyn, for the last seven years Ohio salesman for the Republic Rubber Co., Youngstown, Ohio, has been appointed district manager of the Cleveland branch, with offices at 1745 Euclid avenue. The territory served by that branch includes the greater part of the State of Ohio. Mr. Llewellyn is an experienced rubber man, having spent many years in manufacturing previous to his association with the sales department of this company, and is well known in the territory mentioned.



L. A. LLEWELLYN.

The Cleveland Rubber Corp., Cleveland, has engaged A. H. Harris to take charge of its engineering work and organization of manufacturing. The Osborn Engineering Co. is preparing plans for the buildings and equipment for which contracts will be awarded shortly.

The Cleveland Osborn Manufacturing Co., Inc., Cleveland, is adding another story to its main building to increase the capacity of its molding machine department. The offices will be located

in the new story. An additional story is also being built on the brush factory, to which the brush stock room will be moved.

* * *

The Cleveland Rubber Mold Foundry & Machine Co., 406 Schofield Building, Cleveland, has purchased a plot of land on Warner Road, comprising approximately five acres, where it will build a plant of three units separated by fire walls. The foundry building will be 180 by 110 feet; the light machine shop, 180 by 100 feet; and the main machine shop, 220 by 160 feet, with a mezzanine floor above the side and east end bays.

MISCELLANEOUS OHIO NOTES.

The Mason Tire & Rubber Co., Kent, Ohio, has elected E. G. Tillotson, senior member of the firm of Tillotson & Wolcott of Cleveland, and W. R. Green, secretary of The Guardian Savings & Trust Co., Cleveland, to membership in the board of directors to succeed the late D. N. Mason and fill the vacancy caused by the resignation of M. B. Mason.

* * *

The Rubber Products Co., Barberton, Ohio, has appointed Glen Buck, Chicago, Ill., advertising agent. A campaign on "Stronghold" tires is being launched.

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The Faultless Rubber Co., Ashland, Ohio, is conducting a national advertising campaign on its "Wearever" druggists' sundries.

* * *

The Knox Tire & Rubber Co., Mount Vernon, Ohio, capitalized at \$2,000,000, has a 20-acre factory site within one-half mile of the business section of the city and will build there a plant 100 by 225 feet, of concrete, steel, and brick. In addition to the main building there will be a power plant of the same construction. The site has a frontage on the Baltimore & Ohio railroad and the company possesses water rights from the Kokosing river. The officers are: B. E. Frantz, president; E. Scott Cannell, vice-president; F. D. Spencer, secretary and treasurer; C. B. Carpenter, sales manager; and V. V. Hendershot, superintendent. The Chamber of Commerce is backing the concern.

* * *

The Central Rubber Co., Inc., Defiance, Ohio, is now equipped to reclaim all grades of scrap rubber.

* * *

The Master Tire & Rubber Co., Dayton, Ohio, has been incorporated in that state to manufacture the "Master" cord tire. The officers are: William B. Ruston, president and general manager; George H. Witsaman, vice-president and factory manager; Frank C. Vail, secretary and sales manager; Harry G. Egbert, treasurer and credit manager. J. J. Black, formerly mechanical engineer and superintendent of The Dayton Rubber Manufacturing Co., has been engaged as chief engineer and factory superintendent.

* * *

The Owen Tire & Rubber Co., has installed a restaurant and cafeteria for its employes on the roof of its factory at Bedford, Ohio.

* * *

The Forster Tire & Rubber Co., Millersburg, Ohio, has increased its capital from \$200,000 to \$1,000,000. The officers are: Henry Forster, president and treasurer; W. E. Davis, vice-president and general manager; W. E. Davis, general manager, and M. S. Lower, superintendent.

* * *

The Cascade Tire & Rubber Co., Ravenna, Ohio, which incorporated in June for \$10,000, has increased its capital to \$1,000,000, under date of July 3, 1919. The officers are: J. W. Mart, president and general manager; F. M. Sharp, secretary and treasurer; M. E. Nichols, Milton Fleisher, and F. E. Clyde, directors. The company will manufacture cord and pneumatic

tires and inner tubes. The first factory unit will be built at an early date.

NORMAN A. SHEPARD, PH. D.

DR. NORMAN A. SHEPARD, who, as was mentioned in THE INDIA RUBBER WORLD last month as succeeding Dr. John B. Tuttle as research chemist at the Firestone Tire & Rubber Co.'s plant at Akron, Ohio, although a young man, is well known in the scientific world.



NORMAN A. SHEPARD.

He was born April 8, 1890, in New Haven, Connecticut, where he attended school, graduating from the high school in 1907 as valedictorian of his class. He then enrolled in the chemical course of the Sheffield Scientific School of Yale University, from which he graduated, with the degree of Ph. B., in 1910. He continued his study in the Graduate School of Yale for three years, majoring in organic chemistry under Professor Treat B. Johnson, who is recognized as an investigator of marked ability

in this subject. He was a member of the Yale faculty from 1910 to 1919, first as laboratory assistant and successively as assistant in instruction, instructor, and assistant professor, which office he resigned last July to accept his present position.

Dr. Shepard received his degree of Ph.D. in 1913, and three years previous to this he was elected a member of Sigma Xi, a national honorary organization of men and women interested in original scientific research.

Dr. Shepard has contributed several able articles to the "Journal of the American Chemical Society." During the recent war he was instructor in the Student Army Training Corps, and was detailed on research work on high explosives in connection with the government plant at Bound Brook, New Jersey. He is considered a worthy successor to Dr. Tuttle, who becomes chief chemist of the Firestone company.

MASON TIRE & RUBBER CO. EXPANDS.

Following the detailed announcement of the building of a mill to supply tire fabric, that appeared in THE INDIA RUBBER WORLD, April 1, 1919, comes the report that The Mason Tire & Rubber Co., Kent, Ohio, will double the capacity of its plant, contracts having been placed for two large additions. This, it is claimed, will place this company fifth in point of production among the tire manufacturers in the Akron district. This is the third time the capacity of the plant has been doubled in the last three years.

The establishment of the cotton fabrics mill, and the enlargement of the tire factory will require 500 additional employees, and to provide proper living conditions for them, The Mason Housing Co. was incorporated July 16, 1919, under the laws of Ohio, with a capital of \$100,000, to assist and encourage employees to own their own homes. The directors and officers of the company are the same as those of The Mason Tire & Rubber Co.

Two recent additions to the production list of the company are 40 by 8 pneumatic cord truck tires and 30 by 3½ cord tires.

EXPANSION IN GOODRICH PLANT OBLITERATES RUBBER BUILDINGS ERECTED 35 YEARS AGO.

The accompanying illustration shows leveling crews engaged in razing one of the Akron rubber industry's oldest land marks. The buildings in this group were the home of the American

Hard Rubber Co., for a number of years and were originally constructed by the Goodrich company about the year 1884. It was in these buildings that the Goodrich company first manufactured hard rubber products. Four years later the Goodrich Hard Rubber Co. was formed, the land, buildings and stock of the hard rubber department being transferred to the new company.

In 1898 the American Hard Rubber Co., a combination of several small companies, was organized, taking over the holdings of the Goodrich Hard Rubber Co. This new company retained possession of the buildings until last year, when they removed to their new quarters in East Akron.

A mammoth eight-story-and-basement building costing \$1,500,000 will replace all of the buildings in this group. In fact



REMOVING OLD GOODRICH LANDMARK.

from the standpoint of floor space it will be the largest building in Akron. The construction and equipment will be of the most modern type.

THE RUBBER TRADE IN MASSACHUSETTS.

By Our Regular Correspondent.

THE UNUSUAL MIDSUMMER QUIET of past years has not been so marked this season in the rubber trade here, though, to be sure, the footwear factories have been shut down for two or three weeks. Considerable new machinery has been installed, and more would have been added, but manufacturers of rubber-working machinery and appliances are sold up to capacity several months ahead. The tire business is naturally very brisk at this season, all manufacturers reporting good business, while many new enterprises in this field have started or are contemplated. Clothing people have had some labor troubles, but apparently these have been straightened out. Mechanical plants are busy. The reclaiming business is the one which is feeling the greatest absence of activity, due to the low price of crude rubber. Manufacturers prefer to use new rubber rather than reclaim at present rates, and the demand for the latter is little if any over 50 per cent of normal. This condition is reflected in the dullness of the waste rubber market, and dealers are carrying much larger than average stocks, with little demand for any scrap except inner tubes and boots and shoes.

September 1 is the usual date when the manufacturers of rubber footwear announce their prices for tennis shoes for the succeeding season. Higher prices are anticipated, and naturally so when the rise in values in all lines of merchandise is considered. Crude rubber, to be sure, has declined over 30 per cent, but the rubber cost in tennis footwear is but a small proportion of the total. With all other materials costing much more, and labor costs soaring, there is every reason to believe that the

new price lists will show material advances over last year's rates.

* * *

The Boston Woven Hose & Rubber Co. reports a remarkable call for jar-rings. Even though the normal wholesale season is over, the retail demand, now at its height, is being reflected by the reorders from wholesale distributors.

This company is building for completion and occupancy about October 1 a one-story brick and steel building, 165 by 50 feet, to be used for the manufacture of imitation leather. Considerable new equipment will be installed to double the present output. In addition to motor fabrics, material is being produced for baby-carriage manufacturers, handled in conjunction with the company's tire business; also imitation leathers for the shoe trade to which the company furnishes heels and soles.

* * *

George and Samuel Grow have formed the George Grow Tire Co. and purchased and equipped the plant of the C. C. C. Fire Hose Co. at Canton, Massachusetts. The manufacture of cord and fabric tires has been started with an output of 75 tires per day, which they expect to increase to 500 tires by next spring. The cord tires are all hand made, and machines are used in producing the fabric tires, all of the latter being oversize and containing one ply more of fabric than the standard.

George Grow will have charge of sales. The factory superintendent is L. J. McDonald, for twelve years with the Revere Rubber Co. and the Patterson Rubber Co., and for nearly five years with the Needham Tire Co., the last year as superintendent of the latter company's factory.

* * *

The Vaughn-Upton Co., manufacturer of fountain pens and hard-rubber pencil holders for the stationery trade, recently removed its plant from Causeway street to North Washington street, Boston. The present plant occupies the entire top floor of the Trade Building, is excellently lighted on three sides, and is laid out to facilitate manufacturing operations to the best advantage.

* * *

Seaver & Co., 120 Milk street, Boston, manufacturers of fine ivory and bone black, will be located at 3 Tremont Row, in the Olympia Building, after September 1, 1919.

* * *

The First National Bank, Boston, has purchased the Equitable Building on Milk street and the properties immediately adjoining at the rear, the total having an assessed valuation of almost \$2,000,000. The present buildings on the site will be torn down and a new one erected which will be one of the finest banking houses in the country.

* * *

Last month there was an auction sale in Boston of 43,000 pairs of hip rubber boots salvaged from the steamship *Port Hunter*, which was sunk off Long Island more than a year ago. The goods were owned by the Government, and despite the fact that they had lain for several months under water they were found in surprisingly good condition. The boots were offered in 500-pair lots, well sorted as to sizes, and no bidder was allowed to buy more than four lots. The lowest price at which they were sold was \$2.45 per pair, and the highest \$2.51. As the trade price of hip boots runs from \$4.50 to \$4.75, and these were specially heavy and sold to the Government at a much higher figure, the buyers must have considered them bargains.

* * *

Business at the Boston establishment of The B. F. Goodrich Rubber Co., of Akron, Ohio, was suspended on August 7, when the entire force participated in an outing at Nantasket Beach. The company assembled at the Goodrich Building, on Boylston street, and, headed by a band, marched to Rowe's Wharf. Arriving at the beach, a program of sports was offered by the general committee, of which F. T. Moore, New England man-

ager of the company, was chairman. Afterwards there was dancing in the hotel ballroom, visits to Paragon Park and other forms of entertainment.

One of the most interesting events was the fat men's race, which was won by Manager Moore, with W. H. Hickey second. There were no entrants in the fat girls' race, but a number responded when candidates were called out for "pleasingly plump girls." Miss T. G. Ribbs won first prize. There were three-legged races, pie-eating contest for the office boys, various dashes for men and girls and other events. The party returned to Boston on an evening boat.

* * *

Herbert T. Mason, recently with The Goodyear Tire & Rubber Co., Akron, Ohio, is now treasurer and sales manager of the Quabaug Rubber Co., North Brookfield, Massachusetts.

* * *

The Tyer Rubber Co., Andover, Massachusetts, is planning an extension of its welfare work and service to employees. This began by the employment in June of Mrs. E. A. Webster Cross, an American nurse, who had served for about three years with the British Army in England and France, and who for a considerable part of that time was engaged in the industrial service of the British Government for munition workers. During the first month Mrs. Cross has treated about 150 cases, and while the injuries were not in many cases of a serious nature, it is estimated that much real trouble has been avoided by prompt treatment, so that time has been saved both to the individual employee and to the company. Excellent hospital rooms are being fitted up in two of the buildings of the company.

In July an employment and service department was established under the direction of Ralph E. Nash, who has had several years experience in industrial service work overseas. He undertakes the work with no fixed plan, both he and the company feeling that whether or not his work follows the approved and accepted methods of this country or the more recent liberal English methods, depends quite as much upon the employee as upon the company. The introduction of such a department indicates the attitude of the company towards cooperation with its employees, to which it feels a hearty response will be accorded.

THE RUBBER TRADE IN RHODE ISLAND.

By Our Regular Correspondent.

THE MONTH OF AUGUST has in a great measure been a reconstructive one for the manufacturers of rubber goods in Rhode Island, as it has been the first period in nearly four years when there has been so near a complete cessation of production. In consequence of the long period of continuous operation, an unusual amount of overhauling and repairing of the machinery and other equipment of the several plants has been necessary to bring them back to the normal standard. Renovations, rearrangements, extensions and the erection of several additions have been among the activities noted at the various concerns.

The help situation continues to harass the manufacturers, with but little hope of any immediate relief. The abnormal wages paid to laborers during the war by industries that were engaged on governmental contracts attracted hundreds of employees, and few have returned to their regular vocations. It is safe to say that the manufacturers of rubber goods in this city and vicinity could immediately place at least 1,000 employees in their various departments.

* * *

The plant of the National India Rubber Co. at Bristol, which closed down July 31 for two weeks, did not resume operations at the date expected, but was idle for an additional week because of the tie-ups occasioned by the strike on the railroad system. It was not until the 25th that the first of the departments started up, and a week later before all departments were in operation.

During the shut-down the gum-room building in the central part of the factory was raised from two stories to three in

height, thus materially increasing the capacity of the department. General work was done in practically every part of the plant and the factory put in exceptionally good condition.

The National India Rubber Co. has ordered a bronze honor roll tablet to be placed in front of its plant at Bristol, listing the names of those who were in its employ at the time they entered the service of the United States during the World War. The list is in the hands of Andrew W. Anthony, Industrial Relations Manager, who has 237 names on the roll, three of whom are in the list of deaths. When completed, the tablet is to be unveiled and dedicated with appropriate exercises.

The maintenance department of the National India Rubber Co. enjoyed its annual outing and clam-bake on the afternoon of August 10 on the shores of Narragansett Bay at Bristol. Games were played, including baseball.

Laurence S. Greenwell, in charge of the Planning Department of the National India Rubber Co., and Robert Ford, of the same department, during their two weeks' vacation hiked through southern Rhode Island and eastern Connecticut, camping in the woods or fields, using specially adapted sleeping bags.

During their vacation in August, Joseph A. Kennedy, superintendent of the Tubular Woven Fabric Co., of Pawtucket, and J. O. Lindsley, assistant superintendent, captured on a mackerel hook a shark weighing between 500 and 600 pounds. The shark put up an exciting fight and it was nearly two hours before he was landed at the side of the boat.

The first annual outing of the Foremen's Council of the Woonsocket Rubber Co., which comprises the Alice Mill at Woonsocket and the Millville plant and the Lawrence felt mill, was held Saturday afternoon, August 16, at the Warwick Club on Narragansett Bay. About 130 foremen and guests were present and enjoyed the luncheon and clam-bake. A program of track events and a baseball game among the members was much enjoyed. The party went to Warwick in two special cars. Among the invited guests were Myron H. Clark, Arthur Reeves, Henry C. Wagner, George Schlosser, William H. Schlosser, Waldo E. Kelly, Thomas F. Rogers, B. J. McLaughlin, Eugene Reilly, William T. Aldrich, Herman Fahrenholz, Walter R. Williams, William Kehlthau, Clarence H. Guild, Arthur A. Spencer, Michael J. Bowes and Otto Koerner.

The sale of the Globe Yarn Mills at Fall River, which was announced early in the month, was of more than ordinary interest in textile and rubber circles in this State. The purchaser was the Connecticut Mills Co., of Danielson, Connecticut. This property is the last of the cotton yarn manufacturing plants formerly owned and operated by the New England Cotton Yarn Co., which continued until the present time to hold the controlling interests. The revenue tax stamps attached to the deed of sale indicate that the purchasing price for the property was about \$760,000.

The Globe Yarn Co. is capitalized at \$1,000,000, of which \$500,000 is 7 per cent accumulated preferred stock and \$500,000 common stock, and operates 54,000 spindles, producing hosiery yarns and thread. Extensive changes in equipment will be necessary, as the new corporation plans to make yarns for tire fabrics.

Saturday, August 2, about 500 employees of the Goodyear Cotton Co., of Danielson, Connecticut, held their annual outing at Crescent Park on the east shore of Narragansett Bay. They were conveyed in automobiles and motor trucks and were accompanied by the company's band.

Over 1,200 lads and lassies from the Revere Rubber Co.'s plant, Valley street, Providence, attended the fourth annual outing on Saturday, July 26, at Lake Pearl, near Wrentham, Massa-

chusetts. The party left the Union Station at 8:45 in the morning in two special trains, arriving at Lake Pearl soon after 10 o'clock. A fine dinner, bathing, boating, dancing, and field sports were features of the program. The success of the outing was due entirely to the employees of the firm, headed by an executive committee, of which Miss Odeal Okell was chairman and D. K. MacDonald, secretary, assisted by A. W. Waite, O. H. Carr, F. D. Mills and A. N. Smith.

The Bourn Rubber Co., Warren street, Providence, is running steadily on large contracts for rubber shoes, with encouraging prospects for an indefinite period, although hampered by the handicap of a scarcity of help. Superintendent F. W. Foote has found it exceedingly difficult to obtain female help, notwithstanding repeated offers of better wages than ever before offered for similar work.

The new refrigerator building that was recently erected on the ground of the O'Bannon Corp., at the former plant of the International Rubber Co., at West Barrington, has been completed and placed in operation. The company reports an increasing demand for the rubberized goods that it is producing for use in automobile and carriage tops.

Samuel Fish and Nathan Siegalman have purchased the Supreme Tire & Vulcanizing Co., at 318 Smith street, Providence, heretofore conducted by William and Isador Cohen.

Ellery Merritt, chief electrician, and William Wood, assistant electrician, of the Millville Mill of the Woonsocket Rubber Co., have been spending a month's vacation at the Panther House, Moosehead Lake, Maine.

The What Cheer Tire Co., 3 Claverick street, Providence, is owned by Frederick A. Gaumer and George Cetenich, according to their statement filed with the City Clerk's office.

The Narragansett Tire Co., 146 Bellevue avenue, Newport, is being operated by the Fulton Tire Supply Co., of Boston, with Israel Smith as resident manager.

Hyman Abrams and Harry Gordon are conducting the Arc Vulcanizing Co., 385 Canal street, Providence.

The local branch of the Firestone Tire & Rubber Co. is now at 18 Snow street, Providence. H. J. Aitken is manager.

THE RUBBER TRADE IN NEW JERSEY.

By Our Regular Correspondent.

THE THERMOID RUBBER Co. has purchased a tract of land, 375 by 946 feet, along the Pennsylvania railroad as a site for a new factory to cost about \$300,000, and which will give employment to 600 workers. William J. B. Stokes, president of the Thermoïd company, says that the concern now has engineers at work on preliminary plans for the proposed structure and that it is the desire to have the construction begun early in the fall. The new plant will be of steel and concrete and equipped with tire machinery of the latest type.

The employees of the Ajax Rubber Co., Inc., Trenton, with their families, held an outing at Springdale Park recently. Carl Dibbel, night superintendent of the Ajax plant, was chairman of the committee in charge.

The Fineburg Auto Tire & Accessory Co., Trenton, has purchased the carriage factory of Lewis W. Reeder on South Warren street, where solid-tire presses have been installed. Day and night service will now be given. Several thousand dollars'

worth of additional machinery will be installed at the plant and Mr. Reeder will be manager.

The Hamilton Rubber Manufacturing Co., Trenton, has added a three-story extension to its plant, which will provide about 12,000 additional square feet of floor space. The company has just installed a complete department for the manufacture of high-grade molded garden hose.

The Puritan Rubber Co., successor to the Panther Rubber Co., Trenton, has filed articles of incorporation in the office of the Secretary of State. The new company will occupy the Panther plant on Perrine avenue, and manufacture rubber heels, soles, and similar articles. Associated with the new company are, Frank Bernstein, William Bernstein, Miah Marcus and Tobias Gordon, who is the Trenton agent of the new firm. The Puritan company is capitalized at \$250,000, of which \$80,000 is paid in.

Trenton rubber manufacturers find enjoyment in different diversions during the summer months. John A. Lambert plays golf at the Trenton Country Club; Howard C. Whitehead cruises in his yacht; John S. Broughton takes frequent trips to the seashore resorts; Horace B. Tobin enjoys fishing at Forked River; Charles H. Semple is now on an extended motor trip through the New England states; Robert J. Stokes spends the summer months with his family in the Pocono Mountains; A. Boyd Cornell motors when he is not playing golf at the Trenton Country Club; Clifford H. Oakley is also a devotee to golf; Bruce Bedford spends a few weeks each summer with his family at Wilkes-Barre, Pennsylvania, and William J. B. Stokes enjoys motoring and golf.

The Brighton Mills, Passaic, New Jersey, manufacturer of cotton fabrics, has let contracts for Unit No. 2 at its Allwood plant, to be a duplicate of Unit No. 1 with the exception that the equipment will include particularly machinery for increasing the output of cord tire fabric. It is expected that the new plant will be in operation by January 1, 1920.

The Overland Tire Co., Newark, New Jersey, has purchased a plot on Cortland street and will erect a one-story plant covering about 35,000 square feet at a cost of about \$100,000. The plant will be used for making new tires and rebuilding used ones. John D. Olwell is president and James A. Whitman secretary and treasurer of the company.

OVERLAND RUBBER CO. BECOMES STANWOOD RUBBER CO.

The Overland Rubber Co., Newark, New Jersey, which, by the way, is not a subsidiary of the Willys-Knight interests, has re-incorporated as the Stanwood Rubber Co., with an authorized capital stock of \$3,000,000 preferred and 500,000 shares of common stock without par value. The change of name has been made in order to avoid confusion with other companies including the name "Overland" in their corporate titles, with none of which it has any connection. The Stanwood Rubber Co. has purchased the plant of the Militor Corp., at Newark, New Jersey, in which it is installing equipment for the manufacture of "Stanwood" tires and tubes at an early date. Orders for machinery and equipment are being placed, including that for the power-house. The officers of the company are Charles E. Barker, president; Edward Hutchens, vice-president and engineer; R. B. Gillette, secretary and treasurer; S. P. Woodard, chairman board of directors.

PACIFIC COAST NOTES.

ELMAR S. FIRESTONE, manager of the Los Angeles branch of the Firestone Tire & Rubber Co., has been in Akron attending a conference of the factory branch managers.

F. P. Harrington, manager of the accessory department of the Miller Rubber Co., Akron, Ohio, on his recent coast trip appointed the International Sales Co. of Los Angeles, distributors of the Miller Ad-on-a-Tire in Los Angeles and the southern part of the state.

The Ehman Tire & Rubber Co. of California has opened offices at 742 South Olive street, Los Angeles, for the distribution of Ehman fabric tires. The local representatives are E. F. Riley, H. S. Turner and C. P. Turner. Mr. Riley was at one time in the tire business in Pasadena while Mr. Turner is a Los Angeles pioneer in the tire business.

The B. F. Goodrich Rubber Co. in its campaign to increase the interest in touring in California has this year distributed approximately 250,000 route maps through the state. The peak of travel was reached during August when motorists from all over the United States applied to its various bureaus for information. A large number of tourists made the trip to the East by way of the Midland or Arrowhead trails to Salt Lake City, thence along the Lincoln highway, while others took the route via the Santa Fe Trail, taking in the scenic spots, such as the Grand Canyon of the Colorado and the Rocky Mountain resorts.

The Rubber Products Co., Barberton, Ohio, manufacturers of Stronghold tires and tubes, has entered the Southern California field. The company plans to limit dealers' territory in order to provide more secure protection of their trade. The B. & B. Tire & Supply Co. on South Main street has been appointed Los Angeles representative. At the head of the Pacific Coast organization of the Rubber Products Co. is Edward Slosson, formerly with the Firestone Tire & Rubber Co.'s motorcycle tire department. He will make his headquarters in San Francisco, leaving B. W. Cunningham in charge in Los Angeles.

Edwin M. Fowler & Co., Los Angeles, cotton dealers, are projecting a tire fabric plant which will be equipped to utilize its own waste.

The San Francisco branch of the Mohawk Rubber Co., Akron, Ohio, has practically doubled its facilities to take care of increased business. W. G. Fitzgerald, formerly Kentucky representative of the company, is in charge.

M. Rapp, San Francisco, has left for Akron, Ohio, to put the finishing touches to his education as a tire salesman for the Granfield-Baston Tire & Supply Co., distributors for Diamond cords and fabrics and Goodrich solid tires. He is well known as a hand-ball player and all around athlete.

P. H. Lyon of San Francisco, secretary of the Chanslor Lyons Co., distributor for Lee tires, has just returned from a trip to the Lee factories at Conshohocton, Pennsylvania.

The energy with which the Firestone Tire & Rubber Co. is pushing its "ship-by-truck" movement is attested by the thousands of celluloid buttons, papers of matches and watch fobs on which is shown a large truck wheel, across the face of which are the words in script "Ship-by-Trucks." The recent parade held in Oakland was a huge success.

Munnell-Sherrill Co., 40 First street, Portland, Oregon, a tire jobbing house, has been appointed a distributor of Mohawk tires and will carry a large enough stock to facilitate prompt shipments in the Northwest.

The Oregon Tire Co., 61 First street, Portland, Oregon, has been assigned the Portland territory for McGraw tires.

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The Deaton Tire Co. of Seattle has been appointed agent for the distribution of the Oldfield Tires for Kings County and has opened a salesroom at 1211 Pine street.

* * *

The Rubber Service Co., 1023 East Pike street, Seattle, Washington, has been appointed distributor for the Mohawk tire and will carry a large stock of casings and tubes.

* * *

The Jensen-King-Byrd Co., 320 Riverside avenue, Spokane, Washington, has been appointed distributor of Mohawk tires in its territory and will carry a complete stock.

* * *

Pacific Coast representatives in Congress have been especially active in promoting the National Highways movement and many of the two score bills before that body have been sponsored by the statesmen from the Western slope. It is interesting to note in analyzing the proposed road measures that the demand comes from all sections of the United States, showing that the movement for national highways is a genuine growth and that the road question has passed beyond the sectional stage.

NEW ERA FOR INDUSTRY IN SOUTHERN CALIFORNIA.

WHEN FRANK A. SEIBERLING, president of The Goodyear Tire & Rubber Co., drove the first pick into the ground on the site of the great rubber plant to be erected in Los Angeles, he gave an impetus to a project which is a result of the free industrial policy of that city. Whether other eastern manufacturers will follow in his footsteps and take advantage of the

and shipped back to the coast. The cotton grown in the Salt river valley is carried in cars to Goodyear, Connecticut, and from there to the plant at Akron where it is manufactured into product and shipped back to the Pacific Coast. In other words, the two main factors loop across the United States, in railroad transportation, making an unnecessary and wasteful cost. That is sufficient justification to bring us to the coast.

"By a process of elimination we got down finally to Los Angeles. The main factors in a rubber factory are cheap fuel, an abundance of water and cheap power. You must have transportation facilities for gathering raw materials and for distributing your product. All these factors should be as nearly ideal as you can get them.

"When we came to survey the coast we found that Los Angeles had the cheapest power on the Pacific Coast where used in large quantities and that Los Angeles had the only supply of fresh water sufficient for our needs."

Regarding the advantages of the company's plan in establishing a system of homes for working men in connection with the new plant, Mr. Seiberling said:

"Our workmen have all the comforts that I have in my home without the frills and the burdens. A workman working in our factory receives wages as high as are paid in the art anywhere. What more can he ask for?

"What has that done for us? It has established conditions in the factory and given us a body of men that have an interest in our business, that have their future in it; and they are not thinking of Bolshevism, I. W. W.-ism, or the other isms.

"The policy of getting workmen, heads of families, men of character, to buy the homes that we build, will be continued in Los Angeles. We shall assist them in every degree in our power to have them acquire homes that will be sold on long payments and easy terms. As the result we believe that we will obtain the same conditions in Los Angeles as we have in Akron."

President Seiberling predicts the greatest future development for Imperial valley cotton.

"This year, California and Arizona will produce 150,000 bales of the best cotton produced. Less than 5,000 bales is made up here on the Pacific Coast. When the Goodyear cotton mill is running its 33,000 spindles in Los Angeles you will then be making but one three-hundredths of the cotton used in this country. You have one-twentieth of the population living and consuming cotton products on the Pacific slope, that is using the cotton of 1,500,000 spindles. So, you see the opportunity you have for developing cotton mills to manufacture the cotton which is grown here, instead of shipping it East and then sending it back in manufactured form."

The plans of the Goodyear plant have so far developed that it has now been decided to produce 7,500 instead of 3,000 tires daily. The cotton mills will have 33,000 spindles instead of 22,000. A giant aeronautic plant will also be built as part of the Goodyear establishment.

The ceremony of the ground breaking brought a large number of Goodyear officials and prominent citizens of Los Angeles to the site at Ascot Park. In the party which assembled, including Mr. Seiberling, were Paul W. Litchfield, F. L. Landon, C. Slusser, D. J. Koorce, William Hunkin, George Bellis, Henry K. O'Melveny, W. H. Daum, George C. Griffin, W. A. Quine, M. E. Morris, R. G. Kreitler and John Breen.

MOTOR AND ACCESSORY MANUFACTURERS' ASSOCIATION MEETING.

The Motor and Accessory Manufacturers' Association will hold a convention September 11 and 12 at the Hotel Lafayette, Buffalo, New York. Although this will be primarily a credit convention, subjects of importance to the entire automotive industry will be discussed.



BREAKING GROUND FOR THE GOODYEAR DEVELOPMENT AT LOS ANGELES.

opportunities that Los Angeles offers for growth untrammelled by the interference of labor agitators, remains to be seen.

"We chose Los Angeles," said Mr. Seiberling, "because we thought that here was not only an adequate supply of labor, but an adequate supply of free labor capable of being trained into the skillful occupations that are required in our industry. That was one of the controlling factors in our decision."

Summarizing the reasons for building a Goodyear plant on the Pacific Coast, and for selecting Los Angeles as the site, Mr. Seiberling continued:

"We are handling, from Akron, business on this coast approximating \$13,000,000 annually. The raw materials from which it is made are crude rubber and cotton, the two main factors. The rubber comes from the Far East to these western shores, is transported by cars to Akron, manufactured into product,

The Rubber Trade in Great Britain.

By Our Regular Correspondent.

THE SHORTER WEEK AND PRODUCTION.

AT THE ANNUAL MEETING of the National Joint Industrial Council for the Rubber Trade, held in Manchester on July 9, 1919, Mr. J. T. Goudie was reelected chairman on the suggestion of the operatives, notwithstanding the fact that, according to the constitution, it was the right of the latter to elect a new chairman. The operatives said they were grateful to Mr. Goudie for his constant courtesy and for the impartial way in which he had administered the business of the council. It will be interesting to see if this action of the rubber workers is copied in any other of the various industrial councils. The most important feature of Mr. Goudie's address was in reference to the 47-hour week. He assured the operatives that the employers are in no way opposed to shorter hours and higher wages, but he emphasized the vital necessity for a full production. The fullest possible output is necessary in order to cope with the competition which, keen at present, is likely to become even more severe in the near future. He made the suggestion that both sides should appoint special subcommittees to consider this matter. This is a really important subject and it is agitating the minds of employers in most branches of industry. It is no good thinking the fact that the shorter working week means a decreased output, a more unfortunate state of affairs when order books are well filled. Nor do I think that a remedy will be easily found by appeals to the operatives. The British workman will not readily change his acquired habit of turning out so much work in a given time. The policy of hustle, which I believe is not unknown in America, does not appeal to him, and I am afraid that the economic interests of the country generally do not come up for much consideration. From what employers in the Rubber Trade tell me, I gather that they are not at all hopeful of increasing output except in the way of doing by machinery what has hitherto been done largely by hand, and it would mean that there is plenty of scope for the exercise of ingenuity in bringing about the transition from hand to machine work in departments of the industry in which manual labor has hitherto ruled supreme.

Although the trade generally has plenty of business on hand, both for home and foreign account, we seem to be continually held up by labor troubles of one sort or another.

THE COAL SITUATION.

At the time of writing the coal strike in Yorkshire has caused many textile concerns to shut down. The temporary closing of the works of the Bradford Dyes' Association has caused a stoppage of the delivery of certain classes of textiles urgently wanted by the Manchester proofing works. Then there is the 6s. per ton addition to the cost of coal, which the rubber manufacturers say will have to be passed on to the purchaser of goods. With regard to this item of cost in manufactures generally, it will probably turn out that it will be made the occasion, or the excuse, for a larger addition to the price of finished goods than is necessary or warranted.

There must be borne in mind not only the additional cost of the coal used as such, but also the higher price of electric power now so largely used in rubber works. Further, the increased metallurgists' and engineers' cost will be duly passed on to the buyers of machinery, which will now cost more.

It is quite possible that the increase in manufacturing costs may improve the rate of organic accelerators, as the point of the largest output in a given time will be of greater importance. Otherwise, the high price of the accelerators, which cost from

two to three shillings per pound, as against so many pence for sulphur, has been against their more extended use.

PATENTS AND DESIGNS BILL.

One of the principal objects of the new Patents and Designs Bill now being considered, is to prevent foreign patents received in this country being exploited mainly in the interests of the country of their origin.

PROOFING CASE SETTLED.

The action listed at the Manchester July Assizes, *Quas-Cohen v. Ferguson, Shiers & Co.*, was settled on terms after being brought into court. The plaintiffs, *Quas-Cohen & Wilks*, waterproof garment manufacturers of Cheetham, Manchester, and *Ferguson, Shiers & Co.*, of Failsworth, Manchester, rubber proofers, for breach of contract and damage caused to certain cloth by defective proofing. The case was concerned with a contract which the plaintiff obtained in 1917 for the supply of 100,000 military ground sheets, the manufacture of some of which was arranged with the defendants. Of the goods proofed by the defendants, however, 4,000 were rejected in expert examination as not being properly vulcanized and they remained on this plaintiff's hands as practically useless. Shortly after the case was opened an agreement was come to whereby judgment was entered for the plaintiff for £1,375, the rejected goods to remain in the plaintiff's possession.

It may, perhaps, be mentioned that the defendants are a distinct firm from A. O. Ferguson & Co., Limited, which carries on a similar business in the same neighborhood.

INQUESTS ON FIRES.

Under the City of London Fire Inquest Act of 1868, it is compulsory to hold coroner's inquests into the cause of factory fires, although outside London no enquiries are held unless fatalities have been recorded. In view of several large fires which have recently occurred in the north of England, it has been suggested that the London system might be extended with advantage to the country, or that, at any rate, the American system of having a fire marshal in manufacturing towns. The general rule in our towns is to state that the cause of the fire is unknown and it is rarely that any officials desire a proper investigation into the circumstances. In the earlier days of the war several fires occurred in our rubber works, but there is nothing on record by which the experience gained could be utilized by others as a help to preventive measures. The common remark that the fire was caused by defective insulation is resented by cable makers, and spontaneous combustion is frequently adduced to cover carelessness. It is, I believe, generally accepted that fires in proofing works are more common with petroleum spirit than with coal tar naphtha, but I doubt if it is generally recognized that the cause is due to the greater facility with which the former solvent becomes electrically charged and capable of ignition by a spark caused by friction. With regard to the general question of the loss caused by fires, it is not enough nowadays to assert that the loss is covered by insurance. There is the present difficulty of replacing damaged machinery, to say nothing of the higher price which has to be paid. All things considered, then, it would seem that fire inquests should be far more general, and the valuable information which would be obtained could be summarized in handy form for the guidance of others engaged in similar industries.

NEW CORPORATIONS.

Mr. Alfred Smith, of Excelsior Works, Clayton, Manchester, manufacturers of rubber substitute, reclaimed rubber and

rubber chemicals, has converted his business into a private limited company, the directorate consisting of himself and his two sons. The capital is £80,000. The firm has considerably enlarged its business in recent years and has established agencies in a number of foreign countries, the New York City address being 98 Maiden Lane.

The United Kingdom Dental Manufacturing Co., Limited, has been registered with a capital of £200,000,000, the registered office being at 167 Oxford street, London. This is an American concern, the directors including W. L. Smith, of Pittsburgh, and T. G. McCann, of Philadelphia. Although we have in England the well-known firm of Claudius Ash, Sons & Co., Ltd, dental supplies, a large amount of dental rubber has always come in the past from America, and no doubt the present and prospective trade restrictions have been instrumental in the formation of this new company. We have also imported a good deal of dental rubber from Germany, and when this was cut off during the war, there was an outcry against the high price charged by British firms for goods of the same character.

The Enfield Edison Cable Works, Limited, capitalized at £200,000, has been formed to take over the business and assets of the Enfield Electric Cable Manufacturing Co., Limited, which, it turns out, was the purchaser of Connolly Brothers' cable works at Blackley, Manchester. The sale of this latter concern by auction was recently referred to in this correspondence. The new company's works are at Brimsdown, near London, and considerable extensions are in progress. The chairman of the new company is Viscount Grimston, son of the Earl of Verulam, and head of the St. Albans Rubber Co., which makes the Grimston tire. Other members of the board are C. J. Ford and E. E. Hunter, the chairman and managing director of the Edison Swan Electric Co., Limited, this company taking up 50,000 shares.

MISCELLANEOUS FOREIGN NOTES.

LONDON RUBBER AND TROPICAL PRODUCTS EXHIBITION AND CONGRESS.

A RUBBER AND TROPICAL PRODUCTS exhibition and congress will be held in London next year. The time set is June 3 to June 17, and the place will be the Royal Agricultural Hall, where previous exhibitions have been held. The manager will be Mr. H. Greville Montgomery; he will be assisted by Miss D. Fulton and Miss Edith A. Browne. The offices are at present at 43 Essex street, Strand, W. C.

NEW FINNISH RUBBER AND LEATHER FACTORY.

A new Finnish firm will be established for the manufacture of rubber and leather goods at Helsingfors, Finland, to be known as the O. Y. Finska Trögolnik A. B., with an initial capital of \$965,000. This concern is closely connected with the Trögolnik of Petrograd. Franz Ulthemann is managing director.

LANCASHIRE FACTORIES BUSY.

Business in rubber fabrics is very brisk in the Lancashire factories, and the garment makers are keeping busy. It is believed that the French Government will remove duties on rain cloth, which will help the French rubber trade at the expense of the English. Cloth for motor hoods is in great demand; it is needed for the imported American cars, many of which have English bodies fitted to them.

MARSEILLES CRUDE RUBBER IMPORTS RESTRICTED.

France will give shipping preference to rubber grown in French possessions or elsewhere by companies organized with French capital and under French law. The quantity of rubber to be imported in the year beginning October, 1918, was fixed by the Allied Rubber Committee at 22,000 tons of which 15,000 are to be landed at Marseilles. The imports at that port before the

war were 800 to 900 tons a year, but in the last two years they have increased to about 8,000 tons yearly.

TIRE EQUIPMENT OF FRENCH MOTOR CARS.

Examples of the tires now used in France are shown in a circular recently received from a prominent automobile dealer of Paris. A touring car has wire wheels, 820 by 120 m. m., equipped with pneumatic tires, the two rear ones being non-skid. A heavy truck, carrying 4,000 kilos net, has solid tires, front wheels 940 by 130 m. m. with single tires; rear wheels, 1,000 by 130 m. m. with twin tires. A light truck, to carry 1,000 to 1,500 kilos net, may have wheels with either pneumatic or solid tires: for the pneumatic, wheels of Michelin steel plate with tires 920 by 120 m. m., single in front and twin in the rear, two being non-skid. For the solid tires, wheels of wood with 900 by 90 m. m. tires, single in front and twin in the rear.

GERMAN BELTING SUBSTITUTES.

German ingenuity during the war was directed, among other things, to finding substitutes for leather and rubber driving belts. Belts made of tissues sewn together or one rolled inside another were found to be very resistant and strong in the edges. The friction was slight, and they could be mended easily. These were made chiefly of spun flax, hemp or paper yarn. Cellulose materials used for medium-sized machinery belts would not stand much tension. Yarn belts were also woven into tube form, then flattened and sewed together, the material being linen or paper; these proved very useful. Substitute rubber was used for belts where crude rubber or balata had been used before; it did not melt when heated by friction, but it could not stand much tension.

ITALIAN SULPHUR.

There has been a shortage of sulphur in Italy. The price, which was 160 lire (\$20.88) a ton a year or so ago, went up to 425 lire gold (\$82.02) when the armistice was signed. The stock in Sicily was nearly used up owing to the shortage in labor and the demands of the Allies; now the sulphur properties are to be worked to full capacity.

At Molagna, where they managed to keep the works in full operation, a plant has been laid down for making sulphuric acid from the vapor that arises from vents and borings. The Montecutini Company, which turned out 388,000 tons of the half million tons of sulphuric sulphur produced by Italy in 1917, has amalgamated with the Romagna Co. They will exploit again the Boratella and Montecutini mines, which were once esteemed the richest in Italy, but have been long closed. The Agoria mines, at Cordevole, which were closed and partly destroyed in order that the Austrians might not get them have started up again.

DUTCH EAST INDIES RESTRICTION.

Holland places restrictions on visitors to her East Indian colonies. They can land only at specified ports in Java, Sumatra, Borneo, Celebes, Tunis, and the smaller islands, and even there must have disembarkation permits. If they think of staying for any length of time they must procure admission certificates or permits to settle.

IMPORTS OF RUBBER GOODS TO VICTORIA, AUSTRALIA, IN THE FIRST three months of 1919 amounted to £174,633 in value, against £112,203 in the same quarter of 1918.

BRITISH DEALERS ARE TROUBLED AT THE PREFERENCE SHOWN BY Brazil and Argentina of late for rubber goods from the United States. Brazilian imports of rubber goods from England in 1918 amounted to 778 tons, as compared with 1,189 tons in 1913, the last full year before the war.

SAMOA HAS BEEN PRODUCING RUBBER TO THE VALUE OF ABOUT \$100,000 a year, but this is likely to fall off for a time owing to plantation difficulties.

Rubber Planting on the West Coast of Borneo.¹

THE FIRST *Hevea* seeds to be planted in Pontianak, West Borneo, were imported from Malacca in 1903 by the Chinese and an Englishman, A. Simons, who later became manager of the Kopoewas Rubber Maatschappij, Soengei Dekan Estate. The Chinese and the well-to-do inlanders were the first to experiment with this new industry, and for want of better ground, they planted on old peat beds. In the Chinese districts of Mandor the first rubber planters were formerly Chinese mine-workers, who, when the mines failed, devoted themselves more and more to agriculture. The commerce with Batavia and other parts of Java is of considerable importance, and West Borneo being only 32 hours by steamer from Singapore, is another factor favoring the rapid growth of the rubber industry in Borneo.

A Simon, formerly a mining engineer, planted the first seeds around his home at Bengkalon, in the Kopoewas district and at Smitau in the upper Kapoewas where the oldest rubber trees of that region are found. The climate and ground are well adapted to the cultivation of rubber, and in 1910 many Chinese and inlanders planted their rice fields with *Hevea*.

Hadji Oesoep Saigon, the Nestor of the inland rubber planters, persuaded the Sultan of Pontianak to turn over his grounds around the Kampong to the people for rubber planting, with the result that now there are large plantations in that section where hundreds of coolies and tappers earn their living. Thousands of seeds in small low cases, each containing from 250 to 500 plants, were conveyed to the upper districts in native boats, and the decks of the little Chinese tongkangs were floating *Hevea*-nurseries. In the beginning they planted *Ficus elastica*, and *Manihots* also were seen, but these were soon replaced by the harder *Hevea*.

The Europeans, alarmed by the low rubber prices, did not enlarge their plantations during 1917, and plantations could be obtained for very little money. Seeds were also cheaper, and the inlander, being of the opinion that the present low prices could not prevail, planted every available space with *Hevea*, the cultivation of which is not difficult.

In the fourth year the heaviest underbrush is cut down and therefor the trees are left to grow without further care. The scarcity of coolie labor does not concern the small planter, for he expects to do the work with the assistance of his wife, children, and other relatives.

The importance of the native planters in comparison with the Europeans is clearly shown in the export figures. The European production in 1917 was only one-fourth of that of the native production, and only a little more than one-fifth of the total export. The total export for 1917 was estimated at 2,970,240 pounds. Of this more or less than 560,000 pounds was of European production. The production of inland and Chinese rubber plantations, appraised at 550 pounds per hectare² per year, brings the producing area to 4,349 hectares, more or less. The unproductive area is even greater, being estimated at 8,600 hectares. Planted about 600 trees per bouw³ the total would be 7,250,000 trees.

In ordinary soil, production on land with 50 to 65 per cent of sand is fairly good, while production on the same ground with 70 to 75 per cent sand is very good, and level ground with a standard of 80 to 85 per cent of fine sand, strange to say, also yields a fairly good average; trees on the latter, however, should be tapped very early as the ground dries out quickly. In Pematang soils, where the amount of sand is 85 per cent (highest sand percentage), the absence of plant diseases is noticeable, the growth is quicker, and the bark harder and thinner than on rich and old peat soil. The production is above average, apparently due to the ease with which the water is drained from the land in case of floods, while in dry weather, at a long period of drought, when the top soil is hot and very dry, it is cool and moist under the surface. This condition suggests the feasibility of dry farming.

Various products, such as vegetables, are planted with *Hevea* while the trees are young, even sugar-cane being grown. Coffee is not a profitable venture, as the rubber trees cast considerable shade after a few years, retarding the growth of the coffee plants.

Plant diseases in general are not numerous, the most important being the *Djamoer oepas* (striped canker), and knobbed canker (forming nodules in the cortex of *Hevea*). The latter is most generally known in the Pontianak section.

In Pontianak the average production of one laborer, tapping about 300 trees per c., is 1½ to 2 catties⁴ for trees

older than 7 years and 1 to 1½ catties for trees younger than 7 years. On Pematang grounds the production from six-year-old trees is 5 grams per day from one tree. On marshy ground near the shore the average is 3 to 4 grams for 5 to 6-year-old trees. As the trees are very close together and the tapping methods crude, this is considered a good average. The European plantations number about eight in that region, and having contract laborers, show better results in general. It has been proved that it is possible for trees older than 10 years and younger than 14 years, planted on good soil and well cultivated, to yield 2,200 pounds of dry rubber per hectare per year, and it has also been proved that 6 or 7-year-old trees will yield an average of 6 to 10 grams per tree per tapping.

The most commonly used methods of tapping are the V-cut and the herring-bone with two cuts. Every Chinese and native planter prepares his own rubber. Wealthier planters have 20 to 40 tappers who do the work entirely on the European scale. Calenders with smooth and ribbed rollers, a work-shed and a smoke house, nearly all of primitive construction, are their only requirements. Alum is used a great deal as an accelerator of coagulation, being cheaper and more easily obtained, the large carboys of acetic acid being beyond the means of most of the native planters. Alum also has the advantage of coagulating without the danger of its becoming moldy.

Mixing inferior rubber with *Hevea* was often done in the beginning. Bush rubber having been in water for some time



("De Indische Mercurius.")

TAPPING RUBBER TREES FROM BOATS.

¹The A. de Nève in "De Indische Mercurius," March 7, 1916.

²A bouw = 1.33 pounds. A hectare = 2.4711 acres. A bouw = 1,754 attes.

and not fit for sale was mixed with *Hevea* and worked through the machines into crépe, scrap, etc.

Zinc coagulation tanks were gradually replaced by wooden ones. The little Chinese earthen-ware cups were used as latex cups, which served the purpose very well and are to be obtained at a very reasonable price. The Chinese inland or exporter pays little attention to the packing, the rubber sheets coming from various sources being bundled and tied with ropes and hoisted on board the ship for the Singapore market. Notwithstanding the crude methods of preparing and packing the rubber, it is unusually pure and free from foreign matter.

Pontianak boasts of a rubber market where rubber dealers from inland and elsewhere present their rubber to be sold to the highest bidder. Lately the Japanese have bought rubber, not only from the European, but from the Chinese planters as well.

The question of labor has caused the proprietors of the larger plantations much trouble. In the beginning, coolie tappers received 24 florins a month or 80 cents (Dutch currency) a day.

Free coolies, Pontianakers, Javanese, etc., were also employed. These arbitrary people went from one plantation to another, terrorizing the foremen who had little authority over the laborers who worked as long as they pleased, and at their own terms, so that many plantation owners were forced to shut down. Conditions, however, have changed and coolies are satisfied to work for 9 to 10 florins per month.

The Chinese planters are also in need of workers. Formerly Chinese labor was plentiful and cheap, but in 1913 the government imposed a levy of 25 florins for Chinese entering the country. Not long ago a law was passed forcing them to make payment in Singapore. Previously this could be done in Pontianak. The government fears that after planting *Hevea* and other well-paying crops the people will not care to raise rice any longer, and will suffer for want of food. The Chinese have the best rice fields in the west, and also raise pepper, gambier, sago, cocoa, rubber and even sugar cane, and although they are said to be ignorant and careless, the fact remains that they are directly responsible for the progress of the West Coast.

Rubber Planting Notes.

RUBBER PLANTING IN WEST DUTCH BORNEO.

RUBBER culture has extended greatly in West Dutch Borneo in the last ten years. Nearly 90 per cent. of the plantations belong to Chinese, Malaysians, and, more recently, to Japanese. The climate is well suited for rubber; rain falls the year around, and there is no dry season as in Java. Labor conditions are favorable, for Borneo has plenty of native laborers, Dyaks for the hard work, like felling the jungle, and Malaysians for lighter work, like weeding, tapping, etc. Most of the estates are of comparatively small size. Nearly every Malayan has an estate of 50,000 to 60,000 trees, too closely planted, and their handling of the crop is primitive. They borrow of the Chinese, who in that way come to own plantations too, while the Malayan sinks to the status of a coolie. The rubber production of West Borneo was as follows

1915	306,836
1916	313,616
1917	542,145
1918	750,640

It is expected that in five years the output of the Sambas estates alone will be 6,600,000 pounds.

RUBBER PLANTING IN BRITISH NORTH BORNEO.

In 1917 about 3,000 additional acres were planted in British North Borneo, making the total acreage 34,828, according to the "Annual Report for Agriculture," British North Borneo, 1917. Of this area, 21,400 acres, representing half the total number of trees, were tapped. The production in 1917 was 2,611 tons, of which 2,444 was exported. In 1917, 14,292 coolies were employed, the number having doubled in two years. Much of the land is hilly and the question of soil erosion is serious.

EXPORT DUTY ON FRENCH COLONIAL RUBBER.

A proposal to put a duty of 1.50 francs per kilogram (\$0.13+ per pound) on raw rubber that is not produced in the French Colonies has been made by the Deputy for Indo-China. The Paris Chamber of Commerce has protested vigorously against the proposed law.

RUBBER LANDS IN BRITISH EAST AFRICA.

The new governor of British East Africa, Gen. Sir Edward Northey, in expatiating on the advantages of all East Africa, from Somaliland and Abyssinia to Natal, for white immigration, owing to the accessibility to temperate climate on the mountains and

high tableland, called attention to the variety of crops that can be raised, among them rubber, along the whole extent and especially in the Lake Nyassa region.

AMENITIES OF MALAYAN RUBBER CULTIVATION.

Various incidents recorded in the "Straits Budget" show how the monotony of plantation life is broken. In Kajang a herd of elephants broke into an estate and destroyed 600 rubber trees. At Tangkah the coolies would not work because a tiger was carrying away pigs; he was shot a few days afterward and weighed 300 pounds; at Sungei Senai another tiger carried off a tapper in broad daylight and only fragments of the man were found later. In Singapore itself a 16-foot-long cobra was found one of the piers, and, after it had been noosed, dragged off the pier to the highroad three men who were holding it.

PARA RUBBER IN UGANDA, AFRICA.

In Uganda, Para rubber has become the main crop on most plantations, particularly those in the more humid parts of the Protectorate. Other rubbers are neglected because *Hevea* proves well suited to conditions, and suffers little from pests and diseases. The 1918 output was 144,727 pounds of plantation rubber valued at £9,965, and 9,362 pounds of forest rubber worth £923. Prices are low on account of the restrictions of the United States on imports and prices.

EXPORT DUTY ON NETHERLAND EAST INDIAN RUBBER.

The *Persbureau Van Dias* of Amsterdam, Holland, reports that plans are being made to levy a tax of 10 to 15 cents Dutch currency (4 to 6 cents U. S. currency) per pound on crude rubber shipped from the Netherlands East Indies.

Protests have been made by the *Internationale Vereeniging voor de Rubbercultuur* (International Society for Rubber Culture) at the Hague, representing nearly all the Netherlands East Indian plantations, and also by the *Amsterdamsche Vereeniging voor den Rubber Handel* (Amsterdam Society for the Rubber Trade), which is made up of dealers, brokers and plantations.

Fear is expressed that higher prices, which necessarily must follow the adoption of the proposed plan, would prevent competition with the Netherlands East Indian rubber in the world market. While an export duty might not result in profit to the

The plantations it would without doubt adversely affect the young trees.

EXTRACTING OIL FROM HEVEA SEEDS.

Planters of *Hevea* have been led to believe that they could make large profits by extracting oil from the seeds, but experiments, the results of which were published in the "Bulletin Economique de l'Indo-Chine," show the expense of collecting the seeds and extracting the oil to be so great that the net returns are not encouraging. The percentage of oil in the seeds was found to be 30 instead of 40 as anticipated, and the number of seeds produced by each tree was much less than the estimates. It seems probable that better results may be expected from improved methods of gathering and treating the seeds, as the oil content is considerable.

WAX-COATED COAGULATING TRAYS.

Wooden trays made waterproof by being coated with a special composition of wax, and intended to take the place of the enamelled dishes used in coagulating rubber latex have been invented by Gordon Skene in Ceylon. The tray is as large as four of the ordinary dishes.

RUBBER ACREAGE IN INDIA.

The following was the acreage of rubber cultivation in India at the end of 1917: South India, 47,631 acres, 37,510 in tapping. Burma, 63,857 acres, 27,172 in tapping. Assam, 3,064 acres *Ficus elastica*.

WET ROT IN HEVEA ROOTS.

Fomes pseudo-ferreus is the cause of "wet rot" in the roots of the Para rubber tree, according to the Department of Agriculture of the Federated Malay States, Bulletin 28. Three species have now been found that can live parasitically on *Hevea*: *fomes lignosus*, the white root fungus; *fomes lamasensis*, the brown root disease, and *fomes pseudo-ferreus*.

INDIA RUBBER IN ITALIAN SOMALILAND.

FROM THE INVESTIGATIONS of botanists and other scientific travelers and from many practical agricultural experiments, it has been demonstrated that in Italian Somaliland many important rubber-yielding plants are to be found growing wild, and also that the surroundings, if properly chosen, are favorable for the culture of *Manihot Glaziovii*. Though experiments in cultivation have met with varying success, a colonial farmer, P. Guelfi-Camajani, asserts in the "Tribuna Coloniale," Rome, that they have taught both scientific men and practical farmers how to surmount the obstacles in their way and strong efforts to establish rubber culture would already have been made had it not been for the war.

Various members of the *Apocinaceae* family flourish in Somaliland; those found so far are: *Landolphia Florida*, *Landolphia petersiana*, *Adenium coitatum* and *Hunteria Africana*. *Landolphia Florida*, in Somali "Mabargo," is found all over Africa; in Somaliland it grows in moist places and gives plenty of latex. The analyses of the plant latices were all made in the Pirelli laboratories, the report stating that the Somali *Landolphia Florida* yielded 18.8 per cent caoutchouc and 79.2 per cent resin, the rubber being of light color and possessing nerve, the resin having a low fusion point. The *Landolphia petersiana* has its home in East Africa. The London Imperial Institute's analysis of that grown in British East Africa gave 82.5 and 80.7 per cent caoutchouc, with 13.4 and 12.6 per cent resin; the quality is close to that of the *Hevea Para*. The *Hunteria Africana* seems to have some rubber qualities, while the analysis of the latex of *Adenium coitatum* by the Pirelli lab gave 85 per cent resin and 15 per cent of a substance like gutta percha.

Of the *Euphorbiaceae* there are half a dozen varieties, only two of which, however, have a rubber value. *Euphorbia cuneata*, in Somali "Da-ri-nder," gives a latex containing 17.7 per cent caoutchouc and 81.80 per cent resin; the latter is hard, fragile, and neuter. The caoutchouc has little nerve, cannot stand a temperature above 50 degrees C., but, it is believed, can be utilized in the rubber industry. *Euphorbia Tiracalli*, in Somali "Dauno," flourishes in arid places; it could be planted in the many desert portions of the land. It gives an abundant latex which yields 12.2 per cent caoutchouc and 87 per cent resin. This rubber in Senator Pirelli's opinion can be utilized in the rubber industry, and can be substituted for jelutong.

The *Manihot Glaziovii*, imported from Brazil, where it yields the Ceara rubber, flourishes admirably in East Africa. In Somaliland it is the only plant that is cultivated on the rubber plantations. The field is open for Italian enterprise to develop the production of both the cultivated and the wild forms of caoutchouc.

Meanwhile, at the Versailles conference, Italy is pleading to have her Eritrea and Somaliland colonies joined by the concession to her of British Somaliland and the intervening strip of coast. This would cut off Abyssinia effectually from the sea.

RUBBER SOURCES AND RECONSTRUCTION POLICIES.

THE LISTING of GOVERNMENT control of raw material among the reconstruction policies of European nations again draws attention to the complete dependence of American rubber industry upon importation of crude rubbers. The situation is concisely set forth in the "Commerce Reports" of August 1, 1919, by the following statistics compiled by a representative of an American company.

While it is intimated that the reconstruction policies being formulated abroad will not be without effect on America's supply of crude rubber, it hardly seems credible, in the face of the present great over-production and the anxiety of thousands of plantation shareholders, that any government will find it either necessary or wise to hamper the normal dealings of rubber planters with their best customers in the United States.

The facts and statistics presented are in part as follows:

During 1917 Far Eastern plantations produced about 79.5 per cent of the world's supply of crude rubber; the British colonies turned out approximately 80 per cent of this, or 63 per cent of the total production of the world.

The only place on American soil where conditions have been found favorable to rubber growing is the insignificant total of the Philippine Islands, where 147 tons was produced in Mindanao in 1917, or sufficient to last one of the large American manufacturers about one day. Owing to an insufficient supply of good cheap labor (our Government prohibits the importation of Chinese coolies) and government restriction limiting to 2,500 acres the amount of land which corporations can own, the investment of American capital has been restricted and discouraged.

OWNERSHIP OF RUBBER PLANTATIONS IN THE FAR EAST.

It is notable that 76 per cent of planted acreage of plantation rubber is owned by British capital and 2.8 per cent by American capital, according to best available authorities, as follows:

Plantation Interests.	Acreage.	Per Cent.
British	1,313,576	75.9
Dutch	260,000	13.0
French and Belgian	109,900	5.0
American	55,000	2.8
German	3,400	.2
All other	63,577	3.1
Total	1,995,553	100.0

The 55,000 acres planted and controlled by American capital comprise the estate of the United States Rubber Plantations, Inc. in Sumatra. American interests have also recently acquired 40,000 acres of undeveloped land in Sumatra. The Goodyear

Sumatra plantations include 20,000 acres. A very limited area is also planted to rubber in Mindanao, Philippines.

A fraction of over 66 per cent of all rubber plantations are situated in British colonies, so that Great Britain exercises both political and financial control over the supply of this important raw material. Of the total acreage under British control 807,491 acres are in the Federated Malay States and Johore, 159,500 acres in the Straits Settlements, 251,500 in Ceylon, 41,820 in South India, 29,880 in British Borneo, 26,390 in British Burma and 5,000 in the South Sea Islands.

Under the Dutch flag there are 352,455 acres in Sumatra, 238,830 acres in Java and 10,100 acres in Dutch Borneo, giving the Netherlands political control over 40 per cent of total world acreage in rubber plantations. France controls 10,000 acres in Cochinchina, and the share of all other countries amounts to 62,577 acres. An almost unlimited area of desirable land for rubber plantations is as yet available for development in Sumatra and Borneo, but such is not the case with the Malay Peninsula, Ceylon and Java.

SINGAPORE REPLACING LONDON AS THE WORLD'S RUBBER CENTER.

Before the war plantation rubber was shipped direct from Singapore, Colombo, and other ports in the Far East to London, where it was sold at auction. London had always been the world's greatest rubber market. But the submarine menace, together with high ocean freight and war-risk rates and lack of tonnage, placed London at a disadvantage, so that the Singapore market and the Far East has become, temporarily at least, the world's rubber market. The Singapore rubber auctions are growing more and more important and buying of crude rubber is largely centered there. In addition to representatives of all large American manufacturers, all large American and London dealers now have buyers at Singapore. Sales in the Singapore auctions have grown from 552 tons in the year of their origin (1912) to 24,316 tons in 1917. Practically all plantation rubber is now imported into the United States via the Pacific direct from the Far East, in Japanese tonnage.

Although the London market seems without particular influence on conditions here, from a broad point of view, we should not discount consideration of London as a factor in the rubber market; for the majority of rubber plantations are British-owned, and in nearly every case have their central offices in London, and from that city the directors are controlling the sales. It is not unlikely that after shipping, financial, and other conditions resume normal state London may again become a greater factor in the rubber market.

RUBBER LANDS RESTRICTIONS REMOVED.

The rubber lands restriction enactment of 1917, an ordinance of the Government of the Federated Malay States, was intended to discourage American and other alien interests taking up land at a time when British interests were involved in abnormal conditions and at a disadvantage, and provided for discontinuance of land grants of more than 50 acres in extent to aliens. An amendment was passed by the Federated Malay States Legislative Council late in 1917, however, placing British subjects on a par with aliens so far as their position with regard to acquiring rubber lands is concerned.

All British plantation companies, in addition to excess-profits tax, were required to pay export duty of 2½ per cent ad valorem on output of estates when the price of cultivated rubber does not exceed 2s. 6d. per pound, f. o. b. east (which is equivalent to 60 cents gold), and otherwise 5 per cent. The established price is based on standard first latex crepe. Alien producing companies in British territory, including American, were likewise subjected to the payment of export duty.

MINIMUM PRICES AND RESTRICTED PRODUCTION IN THE FAR EAST.

After the American import restrictions were imposed, and with immense stocks accumulating in primary markets, there developed among far east plantation interests, particularly their financial interests in London, considerable agitation for government regulation and protection of producers by establishing minimum prices and restricting output.

Early in August, 1918, Ceylon adopted 125 pounds per acre as maximum production. With prices near the cost of production and the situation acute, an investigating commission was appointed in Singapore by plantation interests, to formulate definite plans and recommendations to submit to the local colonial government and the home British Government, for fixing prices and restricting production. In the meantime temporary measures of relief were provided by the colonial government's suspending export duty and war tax and granting temporary loans to rubber cultivators.

Later the investigating commission appointed by the plantation interests recommended a total restriction of 50 pounds per acre per quarter and the formation of an Imperial trust to buy prime

qualities at \$1 Straits (50.5¼ gold) per pound ex warehouse Singapore; or, as an alternative, for the Government to fix the price at \$0.80 Straits (\$0.45 gold), and to appoint a rubber controller to place orders. The Dutch Government was alleged to be favorable to this plan. The commission estimated that the world consumption of plantation rubber during 1919 would be 117,000 tons.

In order to control raw materials the Netherlands Government prohibited the export of rubber from the Dutch East Indies except by permit.

JAPANESE RUBBER PLANTATIONS IN THE MALAY PENINSULA.

The area of Japanese rubber plantations in the Malay Peninsula, located chiefly in the State of Johore, and held by 125 men, is estimated at 93,803 acres, of which 51,166 acres are already planted and yield 344,000 pounds, or about 154 tons monthly.

Rubber manufacture in Japan is making gradual progress. Imports of crude rubber into Japan amounted in 1917 to 3,748 tons, costing \$4,565,113, as compared with 2,961 tons, costing \$3,623,005 in 1916—an increase of 27 per cent. Japan during 1918 is said to be importing double the amount of rubber imported during 1917.

THE RUBBER SITUATION IN BRAZIL.

AN INTELLIGENT EXAMINATION of the Brazilian rubber trade appears in "Wileman's Brazilian Review" for April 23, 1919. A few figures serve as a text:

SHIPMENTS OF RUBBER.

	Tons.	Value.
1913.....	36,232	£10,375,000
1917.....	33,998	7,484,000
1918.....	22,662	3,998,000

In 1918 the exportation was one-third less than the year before, while the rubber brought in was only about one-half as much. The quantity is not exact, because 6,000 tons more were produced, but were retained by the Brazilian banks and not exported. The writer thinks it fairer and more scientific to compare the figures for the 4 war years with the 4 years preceding. For those periods the decrease in tons was 35,810, or 18.6 per cent, while that in value was £52,018,000, or 61.1 per cent. "These figures show the tenacity with which the Brazilian rubber industry has in the face of tremendous depreciation and difficulties of every kind, maintained a brave front," and has put off "the complete extinction and transfer to the East" of the wild rubber industry. "So long as hard, fine rubber enjoys a premium over every other kind" that prediction will not come true. Yet hard fine which rose to 12s. 9d. a pound in 1910 in the London market, sank to 1s. 8½d. at the beginning of April, 1919.

In 1900 Brazil's rival in rubber production was Africa; the Eastern plantations producing only 4 tons; the figures being 26,750 tons for Brazil and 27,136 for Africa, the only year save one when Africa was ahead. In 1918 the Eastern plantations produced 200,950 tons, Brazil 30,700, and the rest of the world, chiefly Africa, 9,929 tons.

Production	Plantation.	Brazil	Rest	Total	Percentage Increase or Decrease Per Cent.
1900.....	4	26,750	27,136	53,886	
1901.....	5	30,300	25,435	55,735	+1.7
1902.....	8	28,700	23,632	52,340	-5.8
1903.....	21	31,100	24,829	55,929	+6.8
1904.....	43	31,060	23,420	54,480	-11.0
1905.....	145	35,000	37,000	62,145	+14.4
1906.....	310	36,000	39,700	66,210	+6.5
1907.....	1,000	38,000	41,500	79,500	+20.0
1908.....	1,800	39,000	24,600	65,400	-5.2
1909.....	3,600	42,000	24,000	69,600	+6.4
1910.....	8,200	40,900	21,500	70,500	+1.4
1911.....	14,419	37,730	23,000	75,149	+6.5
1912.....	28,518	42,410	38,000	108,928	+31.6
1913.....	47,618	39,370	21,452	108,440	-0.6
1914.....	71,380	37,000	12,000	120,380	+11.0
1915.....	107,867	37,220	13,615	158,702	+31.8
1916.....	132,650	36,500	12,448	161,598	+2.0
1917.....	213,070	39,370	13,258	265,698	+31.0
1918.....	200,950	30,700	9,929	241,579	-9.0
1919 (estimate).....	230,900	35,000	10,000	275,900	+14.4

Summary—

1909-1913 (before war).....	162,355	302,310	117,952	422,617	
Relative production.....	24.2%	47.9%	27.9%	100.0%	
1914-1918 (during war).....	745,917	180,790	61,250	987,957	
Relative production.....	75.5%	18.2%	6.3%	100.0%	

¹ Inclusive of Brazil, Bolivia and Peru.

The writer hopes that as the percentage of new acreage for the plantations has fallen off greatly during the war, the increased proportion of rubber production will be such that Brazil can contend against it.

The States of Pará and Manaós are practically bankrupt and have applied to the Federal Government for help; it is suggested that that government should assume the administration of both. The Amazon rubber industry has seen its worst, but it has laid the foundations of an agricultural industry that may feed it. The demand for rubber may exceed the supply, and the thing to do is to improve the methods employed and the quality, and even perhaps manufacture *in situ*.

RUBBER EXPORTS FROM PARA.

THE STATISTICS of the Port of Pará Company give the total of rubber exports for 1918 as 29,119 tons (65,226,560 pounds), and the following table summarizes the actual rubber exports for the last four years, together with the regions from which the products came:

	1913	1916	1917	1918.
From				
State of Pará,	30,103,135	27,509,702	26,418,246	18,794,664
Average and				
Matto Grosso	21,651,398	19,142,026	23,142,718	18,086,990
Acie Federal	12,729,339	15,309,604	29,970,772	27,181,836
Bolivia,				
Peru, etc.				
Totals	64,483,872	61,961,332	79,761,736	64,062,920

The total amount of rubber received at the port of Pará during 1918 was 54,716,116 pounds, as follows:

	Pounds.
State of Pará	14,310,828
State of Amazonas	47,497
State of Matto Grosso	1,172,765
Acie Federal	13,424,806
Bolivia	6,683,620
Peru	2,334,915
Unclassified	14,247,685
Totals	54,716,116

The net weight of rubber exported was 47,643,086 pounds, of which there were shipped to:

	Pounds.	Per Cent.
Liverpool	10,622,878	22.2
Lyons	1,916,539	4.0
New York	34,341,832	72.1
South America, etc.	191,586	.4
Barbados	579,249	1.2
Totals	47,643,086	100.0

The quantities of rubber thus shipped were:

	Pounds.
Fine	17,559,821
Medium	1,236,123
Sernamby	6,341,284
Cauchó	7,776,267
Other grades	14,729,591
Totals	47,643,086

The quantity of Bolivian rubber actually sent to Pará during the year is registered at 6,672,818 pounds (gross weight), while 2,334,915 pounds came from Peru.

THE RUBBER TREE ASSOCIATION OF AMAZONAS.

The *Club da Seringueira*, the rubber-tree club, a section of the Agricultural Association of Amazonas, at Manaós, Brazil, was incorporated April 24, 1916, in accordance with the laws of Brazil, and designated "an institution of public utility" by the Brazilian Government, December 27, 1917. It took over at once the supervision of the *Seringal Miry*, an experimental rubber estate, which had been started in September, 1916. The club also began operations at the *Campo de Experiencias da Sociedade Amazonense de Agricultura*, which had been handed over to the Government three years before when all work was suspended; Dr. Angelino Bevilacqua is director of this and C. J. Carvalhaes, manager of the *Seringal*. The club receives financial aid from the State of Amazonas and publishes a monthly bulletin "*A Seringueira*," which contains not only news of the doings

at the stations it supervises, but also interesting rubber information from all parts of the world.

The president of the Club is José Claudio de Mesquita, with Dr. Osman Pedrosa, Dr. Alpedo A. da Matta, Dr. Antonio Crespo de Castro and Dr. Angelino Bevilacqua as directors; the secretary is Arthur Ferreira, who is on the administrative council with Dr. Esmeraldo A. da Silva Coelho, Dr. Alcides Bahia, Dr. Francisco P. de Araujo and Raymundo C. Montiero da Costa.



HEADQUARTERS OF THE CLUB DA SERINGUEIRA.

The office of the club is in the building of the *Associação Commercial* (Business Association), Rua Marechal Deodoro, Manaós.

The Club has selected June 24 as "Rubber Day" and celebrates the occasion by public festivities in the *Seringal Miry*, where experiments in everything that relates to the cultivation and extraction of rubber are carried on and suggested improvements are tried out.

TWO NEW OCEAN CABLES PROPOSED.

An effort is being made by American firms with trade interests in the Orient to have a second Pacific cable laid. The present one from San Francisco through Honolulu, Guam and Yokohama to Shanghai has become wholly inadequate to meet the demands of the increased business during and since the war, and the average time for a message from San Francisco to Yokohama or Shanghai is now about four days. A committee has been appointed by the National Foreign Trade Council to investigate conditions and urge the present Pacific Cable Company to extend its facilities. Reliable estimates place the cost of another cable in the neighborhood of \$8,000,000, and it is believed that such a cable would soon pay for itself with the increasing trade in the Far East.

Large business interests in the United States and Scandinavian countries are also projecting a cable between New York and Sweden, probably ending in Gothenburg. The congested condition of the Atlantic cables, as well as the increased trade with Norway, Finland and Russia, are responsible to a great extent for the project, but a northern route of communication has been needed for some time.

REASONS GIVEN FOR THE REDUCED OUTPUT OF RUBBER FROM Brazil are the low level of rubber prices, the abnormally low prices for cauchó and the epidemic of Spanish influenza which impeded work.

THE "REVISTA DA ASSOCIAÇÃO COMMERCIAL DO AMAZONAS" concurs in the opinion of THE INDIA RUBBER WORLD, quoting as follows: "Numberless risks might result from any modification of the method of extraction—well-smoked "Pará rubber is the best in the world."

Recent Patents Relating to Rubber.

THE UNITED STATES.

ISSUED JULY 8, 1919.

- 1,308,846. Hose supporter. W. E. Cowling, Sioux City, Ia.
1,308,846. Metal and rubber tire. F. F. Green, Colgate, Ohio.
1,308,870. Saddle and saddlebag. M. W. Siddons, assignor to the Treo Co., Inc.—both of New York City.
1,309,047. Rubber boot or shoe. R. B. Price, New York City, assignor to The Goodrich's Metallic Rubber Shoe Co., Naugatuck, Conn.
1,309,449. Tire liner. J. H. Grube, assignor to Airsafe Inner Tire Co.—both of Los Angeles.
1,309,449. Tire tread. H. M. Lambert, assignor to Lambert Tire & Rubber Co.—both of Portland, Ore.
1,309,460. Cushion tire. H. C. Clute, Tucson, Ariz.

ISSUED JULY 15, 1919.

- 1,309,691. Hose supporter. C. E. Mordhouse, Milwaukee, Wis.
1,309,765. Man's garter. C. L. Meyer, Bellevue Borough, Pa.
1,309,795. Tire-stem cap. R. A. Campbell, Minneapolis, Minn.
1,309,912. Garter. H. J. Penn, Madison, N. C.
1,310,048. Demountable rim for tires. E. K. Baker, assignor to the Universal Rim Co.—both of Chicago, Ill.
1,310,084. Hose supporter. C. C. Jones, Toronto, Ont.
1,310,113. Non-puncturable tire. H. H. Culmer, Chicago, Ill.
1,310,119. Elastic strap fastener. C. D. Harper, Akron, O., assignor to The B. F. Goodrich Co., New York City.
1,310,121. Inner tube. G. A. Lane, Perrin, Calif.
1,310,156. Blow-out patch of rubber-coated wire fabric, with vacuum-cup outer surface. L. F. Clark, Fawcett, assignor of 1/2 to A. L. Stebo, Jr., Plainfield—both in New Jersey.
1,310,189. Rubber-covered pads for attaching to automobile pedals. F. C. Grant, Chicago, Ill.
1,310,212. Bead for pneumatic tires. H. K. Raymond and L. R. Renner, Akron, O., assignors to The B. F. Goodrich Co., New York City.
1,310,300. Pneumatic cushion tire. H. H. Schramm, New York City.
1,310,364. Demountable rim for tires. C. De C. and G. A. Moll, Olathe, Kans.

ISSUED JULY 22, 1919.

- 1,310,438. Inner tube for pneumatic tires, composed of numerous contiguous sheets of rubber with grain running in different directions. F. T. Rouse, Cleveland, O.
1,310,513. Resilient tire. E. J. Taylor, Edmonton, Alta.
1,310,527. Tobacco pouch. V. Guinzburg, assignor to I. B. Klement Rubber Co.—both of New York City.
1,310,625. Respiratory apparatus. J. M. Ginzor, Poughkeepsie, N. Y.
1,310,625. Resilient wheel. J. Stuart, St. Kilda, Melbourne, Victoria.
1,310,624. Split rim for tires. J. A. Johnson, assignor to Kelsey Wheel Co., Inc.—both of Detroit, Mich.

ISSUED JULY 29, 1919.

- 1,311,163. Resilient tire. G. E. Gilmore, Cleveland, and H. M. Hanes, Wellington, assignors by direct and mesne assignments to The Security Tire & Rubber Co., Cleveland—both in Ohio.
1,311,269. Wheel rim with removable side flange for tires. C. W. Grestle, assignor by mesne assignments to The Standard Parts Co.—both of Cleveland, O.
1,311,309. Two-part interlocking pneumatic tire. B. E. Bliss, Wichita, Kans.
1,311,444. Corset with elastic inserts. G. Heilner, New York City.
1,311,545. Composite heel with resilient tread portion. H. R. Abbott, assignor to Brockton Heel Co., Inc.—both of Brockton, Mass.
1,311,720. Detachable tread for pneumatic tires. L. T. Sintel, Los Angeles, Calif.
1,311,728. Rubber under-protector. F. A. Thornton, Corsicana, Tex.
1,311,743. Resilient sandpaper drum, with facing of sponge rubber. M. L. Best, Pasadena, Calif.
1,311,750. Detachable tread for pneumatic tire. A. A. Brashear, Santa Barbara, Calif.
1,311,806. Sectional pneumatic tire. H. B. Coats, Veederburg, Ind.
1,311,857. Laminated rubber and asbestos fabric for tire casings. C. B. Doolin, San Antonio, Tex.

THE DOMINION OF CANADA.

ISSUED JULY 15, 1919.

- 191,512. Garter supporter. R. T. Clarke, Columbus, O., U. S. A.
191,540. Rubber sole for turn shoes. The United Shoe Machinery Co. of Canada Limited, Monctonville, Que., assignee of S. W. Winslow, Jr., Beverly, Mass., U. S. A.
191,557. Marine life-saving apparatus and one-man boat for submarine observation, having rubberized sleeves and leg portions attached to a metal casing electrically propelled. The Submersible Boat Co., assignee of W. R. Barringer—both of Denver, Colo., U. S. A.

ISSUED JULY 22, 1919.

- 191,774. Fountain pen. The Conklin Pen Manufacturing Co., Toledo, O., U. S. A.

ISSUED JULY 29, 1919.

- 191,766. Fountain pen. G. A. Mann and C. H. Marker, inventors, Warren, Pa., U. S. A.
191,779. Fountain pen. D. Cameron, Edinburgh, Scotland.
191,793. Resilient tire. E. Dahl, Minneapolis, Minn.
191,812. Pneumatic tire casing with outer shoe of tar-impregnated fabric. L. Harris, Benton, Ill., U. S. A.
191,869. Fountain pen. J. F. Siegenius, Thorn, Wis., U. S. A.
191,915. Demountable rim for tires. The Universal Tire Filler Co., Portland, Ore., assignee of M. G. Tennent, Seattle, Wash.—both in U. S. A.

- 191,924. Inner tube for pneumatic tires. C. R. Rawdon, assignor of 1/3 interest to both J. H. Heitmann and C. D. Hall—both of St. Louis, Mo., U. S. A.

ISSUED AUGUST 5, 1919.

- 191,974. Inflatable life-preserver coat. S. L. Ross, Lockport, N. Y., U. S. A.

ISSUED AUGUST 12, 1919.

- 192,077. Rubber-covered roller. J. Musket, Manchester, Lancaster, England.
192,124. Tire relifier and method of manufacture. The Canadian Canned Rubber Co., Limited, Montreal, Que., assignee of W. Kearns, Detroit, Mich., U. S. A.

THE UNITED KINGDOM.

ISSUED JULY 2, 1919.

- 125,795. Device for bathing the eyes. J. J. Pouly, 13 rue de la République, Lyons, and J. M. Daurad, 36 Clemen de Pierre-Benite Oullins, Rhone—both in France.
125,859. Marine life-saving apparatus and one-man boat for submarine observation, having rubberized sleeves and leg portions attached to a metal casing electrically propelled. W. R. Barringer, Kenmark Hotel, 17th street, Denver, Colo., U. S. A.
125,870. Friction pad with elastic cord encased at edge to prevent slipping of shoes at the heel. J. T. Wells, 696 Romford Road, Forest Gate, Essex.
125,882. Tire protector consisting of metal plates secured to a rubberized leather band, for use on pneumatic or twin tires. T. H. Gytton, 162 Noone street, Clifton Hall, Victoria, Australia.
125,906. Fountain pen. O. B. Wade, Mayleigh, Petersham Road, Petersham, Surrey.
125,940. Veil with elastic cord inserted at edge. Bonnie-B Co., 222 Fourth avenue, New York City, assignee of I. Silverberg, Sea View avenue, Far Rockaway, N. Y.—both in U. S. A.
125,947. Nut for use with pneumatic-tire valves, etc. H. P. Kraft, 219 Godwin avenue, Ridgewood, N. J., U. S. A. (Not yet accepted).
125,967. Nasal douche. H. B. Nichols, 145 East 36th street, New York City. (Not yet accepted).
125,981. Tire valve. H. P. Kraft, 219 Godwin avenue, Ridgewood, N. J., U. S. A. (Not yet accepted).
125,989. Cushion tire. J. N. McFate, Phoenix, Arizona, U. S. A. (Not yet accepted).

ISSUED JULY 9, 1919.

- 126,116. Pneumatic tire. C. R. Rawdon, 3618 Juniata street, J. H. Heitmann, 4411 Laclede avenue, and C. D. Hall, 5920 Plymouth avenue—all in St. Louis, Mo., U. S. A.
126,176. Revolving metal and rubber tire. J. W. Wasdell, 54 Mason street, Carters Green, and H. S. Brierley, 31 Tenscore street—both in West Bromwich.
126,177. Engine packing having a core of rubber, etc. A. E. White, 88 Chancery Lane, London. (Crane Packing Co., 29 South Clinton street, Chicago, Ill., U. S. A.)
126,297. Respiratory apparatus. J. W. Paul and C. Hall, Pittsburgh, Pa., U. S. A. (Not yet accepted).

ISSUED JULY 16, 1919.

- 126,437. Streamline fairing of ebontite, etc. C. H. Gray, India Rubber, Gutta Percha, and Telegraph Works Co., Silvertown, Essex.
126,491. Packing for stuffing-boxes. A. E. White, 88 Chancery Lane, London. (Crane Packing Co., 29 South Clinton street, Chicago, Ill., U. S. A.)
126,718. Windshields for airplane landing-wheels. Dunlop Rubber Co., 14 Regent street, Westminster, and F. J. Kegan, Alna street, Coventry.
126,738. Aviator's garment to maintain normal atmospheric pressure on the body. A. F. Coates, 20 Downing Road, Clifton, Bristol.
126,746. Earpiece for acoustic receivers, provided with filling of sponge rubber for deadening sound. H. W. Metcalfe, The Claverings, Harbledown, Canterbury, Kent.
126,767. Fountain pen. O. S. Wolstenholme, 2 rue Rosetti, Alexandria, Egypt.

ISSUED JULY 23, 1919.

- 126,772. Demountable rim for tires. M. L. Scrimgeour (née Wakelin), 187 Brunshill Place, Edinburgh.
126,792. Demountable rim for tires. Dunlop Rubber Co., and W. W. Hamill, 14 Regent street, Westminster.
126,823. Appliance for preventing movements of patient in bed. C. F. Smith, 77 Cannon street, London.
126,839. Rubber fastening band for pocket-books, etc. W. G. Hall, 36 Camomile street, London.
126,910. Joint-male packing. Schneider & Cie, 42 rue d'Anjou, Paris.
126,950. Demountable rims for tires. Baker Wheel & Rim Co., 140 South Dearborn street, assignees of E. K. Baker, same address—both of Chicago, Ill., U. S. A. (Not yet accepted).
126,953. Strip material for wrapping tires, etc. E. H. Angier, Framingham, Mass., U. S. A. (Not yet accepted).
126,967. Burying rubber garment for use at sea. A. V. Sims, 2 Rector street, New York City. (Not yet accepted).
127,059. Oil hose. J. L. Hancock, Limited, and H. F. Rogers, 266 Goswell Road, London, and F. R. Cave-Brown-Cave and A. D. Ritchie, 101 Naval Air Station, Kingsnorth, Rochester, Kent.
127,134. Respirator. Sir W. G. Armstrong, Whitworth & Co., Elswick Works, Newcastle-on-Tyne, and H. S. Rayner, Deepdene, Broadway, Wokingham, Reading, England.
127,148. Puncture-preventing band for interlining pneumatic tires. F. Cressley, Upper Parliament Street, Nottingham.

ISSUED JULY 30, 1919.

- 127,410. Goggles mounted in sponge rubber ear-caps, adapted for attachment to goggles, etc. E. T. P. Goodrich, Celley Gerner, Remond, Hildesheim, Germany.
- 127,476. Eraser formerly of laminated rubber strip, etc. W. W. Beaumont, 222 Strand, Westminster.
- 127,532. Fountain pen. O. B. Wade, Mayleigh, Petersham Road, Surrey.
- 127,562. Fountain pen. J. T. Anderson, Gundstrip, near Otterup, Funen, Denmark. (Not yet accepted.)
- 127,591. Surgical aspirator. H. S. White, Canadian Military Hospital, Orpington, Kent. (Not yet accepted.)

THE FRENCH REPUBLIC.

PATENTS ISSUED, WITH DATES OF APPLICATION.

- 489,605. (March 30, 1918.) Improvements in electric cables having several conducting strands, and process of manufacture. C. J. Heaver and E. O. Clément, Paris.
- 489,807. (April 20, 1918.) Prosthetic spectacles specially designed for aviation and automobilism. Société Chénat, Soulat & Cie. (July 28, 1918.)
- 490,999. (July 28, 1918.) Improvements in self-filling fountain pens. The Conklin Pen Manufacturing Co.
- 491,101. (July 31, 1918.) Hose coupling. Société Flury & Schwallier.
- 491,102. (July 31, 1918.) Improvements in tires for vehicle wheels. E. Taylor.
- 491,219. (August 30, 1918.) Respiratory mask to protect against harmful and asphyxiating gases. P. J. Peyres.
- 491,239. (August 12, 1918.) Resilient tire. K. F. A. C. Tire & Rubber Corp.
- 491,291. (September 4, 1917.) Removable rubber heel. A. H. J. Pesron.
- 491,292. (September 19, 1917.) Halter-mask for horses. T. A. Clayton.
- 491,316. (August 21, 1918.) Improved pneumatic tube and process of manufacture. I. L. Jétries.
- 491,375. (July 9, 1918.) Fountain pen and clip. The Conklin Pen Manufacturing Co.
- 491,403. (August 21, 1918.) Improvement in metallic wheel rims, insuring rapid mounting of pneumatic tires. P. Mongiagno.
- 491,404. (August 21, 1918.) Metallic rim for automobile wheels. G. A. Merino.
- 491,443. (August 24, 1918.) Manometer. A. Schrader's Son, Inc.
- 491,478. (August 27, 1918.) Douche bag. G. Whittaker.
- 491,494. (August 28, 1918.) Improvement in fountain pens. T. Cahalan.
- 491,499. (August 28, 1918.) Life-saving suit. S. P. Edwards.
- 491,503. (August 28, 1918.) Resilient tire. J. M. Avery.
- 491,510. (August 29, 1918.) Improvements in resilient tires. S. Grossman.
- 491,602. (September 5, 1918.) Resilient tire. H. C. Babel.
- 491,607. (September 5, 1918.) Hose coupling. Eureka Fire Hose Manufacturing Co.
- 491,635. (September 9, 1918.) Tire valve. C. N. Duval and B. E. Verce.

NEW ZEALAND.

ISSUED JUNE 26, 1919.

- 40,623. Table having rubber surface and clamping bar faced with rubber, for use in removing threads from animal intestines.

TRADE MARKS.

THE UNITED STATES.

- N O. 109,653. Conventionalized representation of automobile headlight glass bearing the words RAINPROOF AUTO COAT—raincoats, etc. The Miller Cloak Co., Cleveland, O.
- 110,165. Representation of an eagle with spread wings standing on a coil of hose, dividing the word EUREKA—rubber fabric or rubber and fabric hose. Eureka Fire Hose Manufacturing Co., New York City.
- 113,621. The word SNAPPLE—fountain pens. General Manufacturing Co., Sioux City, Ia.
- 115,980. A blue ribbon or band running along the center of belting made of rubber and fabric. The Gutta Percha & Rubber Manufacturing Co., New York City.
- 117,082. The word FIREFOAM—fire-extinguishing compounds. Foamite Firefoam Co., New York City.
- 117,400. Representation of a circle surrounding a child's head and the words TOOTSIE ROLLS arranged so that the capital T starts both words—children's rubber candy.
- 117,426. The word "DIRECTOR"—golf balls. The Worthington Ball Co., Elyria, O.
- 117,427. The word "MYSTERY"—golf balls. The Worthington Ball Co., Elyria, O.
- 117,532. The word FUELBERN—powdered chemical material for accelerating vulcanization of rubber, etc. Kutzemback & Hulbeck Co., New York City.
- 118,663. The words WING FOOT—rubber or composition heels and soles. The Goodrich Tire & Rubber Co., Akron, O.

THE DOMINION OF CANADA.

- 24,556. The word UNIVERSAL—erasers, pens, rubber bands, etc. American Lead Pencil Co., New York City, U. S. A.
- 24,613. Representation of a circle bearing a rope having in the upper part the word MINER'S, in the center the words TRI-COLOR, and in the lower part the letter M—rubber footwear, clothing, heels and soles, rubberized fabrics, belting, hose, tires, insulating material, and rubber cement. The Miner Rubber Co., Limited, Montreal, Que.
- 24,635. A black background with the word RAINSTAY placed above the Dominion Symbol and the words MADE IN CANADA below—rubber coats and caps. Canadian Consolidated Rubber Co., Limited, Montreal, Que.
- 24,637. The words DRAGON GEAR and the representation of a diamond and a heel—rubber heels. Robert E. Miller, Inc., New York City, U. S. A.
- 24,752. The word NAUGHAYDE—articles containing rubber. Canadian Consolidated Rubber Co., Limited, Montreal, Que.
- 24,781. The word KERATOL—artificial leather. The Keratol Co., Newark, N. J., U. S. A.

- 24,787. The word RENO—pneumatic tires. Van der Linde Rubber Co., Limited, Toronto, Ont.
- 24,797. The representation of a circle bearing the semblance of a rope having in the upper part the words MINER'S, in the center part the word INVINCIBLE, and in the lower part a design resembling the letters M—rubber footwear and clothing, rubberized cloth, belting, hose, insulating material, tires, and rubber cement. The Miner Rubber Co., Limited, Montreal, Que.

THE FRENCH REPUBLIC.

- 26,323. The word DURATES—imitation leather. The Durates Co., 768 Frelinghuysen avenue, Newark, N. J., U. S. A.
- 26,330. The words MOUT-PLAISANT and imitated gum. The Chiclé Products Co., Mount Pleasant, Newark, N. J., U. S. A.
- 26,331. Representation of tiger's head holding rectangle in open mouth—chewing gum. The Chiclé Products Co., Mount Pleasant, Newark, N. J., U. S. A.
- 26,342. The words "PARAKIT" TRADEMARK, arched, shield, shield, additional handbags, etc. Teico Co., 160 Fifth avenue, New York City, U. S. A.
- 26,283. The words HALF SOLE TIRE—rubber tires. The Gates Rubber Co., 299 South Broadway, Denver, Colo., U. S. A.

NEW ZEALAND.

- 15,438. The word TESTASTOS—asbestos textiles not included in classes other than No. 50. American Asbestos Co., Norristown, Pa., U. S. A.
- 15,458. The word VESARTICLES of clothing in class No. 38. Mishawaka Woollen Manufacturing Co., Hill and Water streets, Mishawaka, Ind., U. S. A.

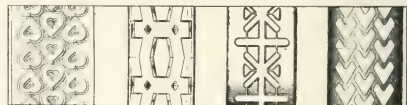
DESIGNS.

THE UNITED STATES.

- N O. 53,494. Tire. Patented July 8, 1919. Term 14 years. E. O. Fritch, assignor to Hood Rubber Co.—both of Watertown, Mass.
- 53,498. Tire. Patented July 8, 1919. Term 14 years. M. Greenspan, Chicago, Ill.
- 53,511. Tire. Patented July 8, 1919. Term 3½ years. A. L. Weeks, Gadsden, Ala.



- 53,494. 53,498. 53,511. 53,555. 53,553.
- 53,553. Tire. Patented July 15, 1919. Term 14 years. G. S. Anderson, Akron, O.
- 53,555. Tire. Patented July 15, 1919. Term 7 years. C. R. Baker, Akron, O.
- 53,589. Tire. Patented July 15, 1919. Term 7 years. B. W. Hartley, Halbury, Ont.
- 53,608. Tire. Patented July 15, 1919. Term 3½ years. S. Reele, Houston, Tex.
- 53,625. Rubber heel. Patented July 15, 1919. Term 14 years. C. Wright, assignor to Racine Auto Tire Co.—both of Racine, Wis.



- 53,498. 53,589. 53,608. 53,661.
- 53,635. Horse-shoe pad. Patented July 22, 1919. Term 14 years. W. J. Kent, Brooklyn, N. Y., assignor to Revere Rubber Co., Providence, R. I.
- 53,639. Automobile wheel. Patented July 22, 1919. Term 7 years. W. J. P. Moore, New York City.
- 53,653. Tire. Patented July 29, 1919. Term 3½ years. W. B. Buckley, Washington, D. C.
- 53,661. Tire. Patented July 29, 1919. Term 14 years. J. H. Kulsiek, Kenmore, assignor to The Oldfield Tire Co., Cleveland—both in Ohio.

THE DOMINION OF CANADA.

- 4,605. India rubber rubber. Patented June 6, 1919. Russel Sutherland Smart, Ottawa, Ont.

ROBERTSON M. R.

This new grade of mineral rubber is manufactured by a patented process in which direct heating is eliminated, thus avoiding all possibility of carbonizing the crude materials. The resulting product is suitable for use in manufacturing high-grade rubber product where mineral rubber has not usually been accepted as a desirable ingredient. The usual advantages of mineral rubber are said to be exceeded in the new material.

Review of the Crude Rubber Market.

NEW YORK.

DURING AUGUST the crude rubber market advanced slightly, but steadily. Prices were very firm, with buyers quite eager and sellers holding back. There is plenty of rubber on hand, waiting for better market conditions. Manufacturers appear to be well supplied; usually they lay in their stocks in August, but this year many bought earlier; some are trying to buy now. Trading is still hampered by the delays with the cables to Europe and the East, as well as to Brazil.

While there was some dealing in futures a month ago, it is now difficult to do any business. The fall in sterling exchange was expected to lower the price of crude rubber, but it had, if any, a contrary effect. The Singapore market is much higher than New York, but it is difficult to do business direct, owing to the cable troubles. In Brazil there is little change. The Pará market is quiet, with prices unchanged from the beginning of the month.

The following quotations indicate the price movement of plantation and South American rubber:

PLANTATION HEVEA. August 1, first latex crépe, spot 41½ cents; September, 42½ cents; October-December, 43½ cents, and January-June, 1920, 45½ cents.

August 25, first latex crépe, spot 45 to 45½ cents; October-December, 45½ cents, and January-June, 1920, 47 cents.

August 1, ribbed smoked sheets, spot 40½ cents; September, 41½ cents; October-December, 42½ cents; January-June, 1920, 44½ cents, and January-December, 1920, 45½ cents.

August 25, ribbed smoked sheets, spot 43½ cents; September, 44 cents; October-December, 44½ cents; January-June, 1920, 46 cents.

August 1, No. 1 amber crépe, spot 38½ cents; August-December, 38 cents; January-June, 1920, 40 cents.

August 25, No. 1 amber crépe, 41½ cents; August-December, 41½ and 42 cents; January-June, 1920, 43½ cents.

August 1, clean thin brown crépe, spot 35½ cents; August-December, 36½ cents; January-June, 1920, 37½ cents.

August 25, clean thin brown crépe, spot 38 cents; August-December, 38½ cents; January-June, 1920, 40 cents.

August 1, No. 1 roll brown crépe, spot 30 cents; August-December, 30 cents; January-June, 1920, 31 cents.

August 25, No. 1 roll brown crépe, spot 32 cents; October-December, 32½ cents; January-June, 33 cents.

SOUTH AMERICAN PARÁ AND CAUCHOS. Spot prices were: August 1, upriver fine, 54½ cents; islands fine, 47½ cents; upriver coarse, 32 cents; island coarse, 20½ cents; Cameté coarse, 21½ cents; cacho ball upriver, 32 cents. August 25, upriver fine, 54½ cents; islands fine, 47½ cents; upriver coarse, 32 cents; island coarse, 21½ cents; Cameté coarse, 21½ and 22 cents; cacho ball, 31½ cents.

NEW YORK QUOTATIONS.

Following are the New York spot quotations, for one year ago, one month ago and on August 26, the current date:

PLANTATION HEVEA—	September 1, 1918.	August 1, 1919.	August 26, 1919.
First latex crépe.....	63 @	41 @ 41½	45½ @
Amber crépe No. 1.....	60 @	38 @	41½ @
Amber crépe No. 2.....	60 @	37 @	40½ @
Amber crépe No. 3.....	58 @	36 @	39½ @
Amber crépe No. 4.....	57 @	35 @	38½ @
Brown crépe, thick and thin clean.....	60 @	35 @	38½ @
Brown crépe, thin, speckled.....	51 @	22 @	36½ @
Brown crépe, rolled.....	44 @	29 @ 29½	32 @
Smoked sheet, ribbed, stand and quality.....	62 @	40 @	44 @
Smoked sheets, plain, stand and quality.....	61 @	39 @	41 @

	September 1, 1918.	August 1, 1919.	August 26, 1919.
Unsmoked sheet, standard quality.....	60 @	38 @	39 @
Colombo scrap No. 1.....	46 @	32 @	33 @
Colombo scrap No. 2.....	44 @	30 @	31 @
EAST INDIAN—			
Assam crépe.....	58 @ 60	*58 @	*58 @
Assam unions.....	54 @	48 @	55 @
Penang block scrap.....	37 @	*40 @	*40 @
PONTIANAK—			
Banjermassin.....	15 @	13½ @	10½ @
Palembang.....	16 @	14½ @	11¾ @ 12
Pressed block.....	25 @	21 @	21 @
Sarawak.....	14 @	11 @	9¾ @
SOUTH AMERICAN—			
PARAS—			
Upriver fine.....	68 @	54½ @ 55	54½ @
Upriver medium.....	62 @	*52 @	51½ @
Upriver coarse.....	40 @	32 @	31½ @
Upriver weak, fine.....	56 @	39 @	40 @
Islands, fine.....	59 @	48 @	48 @
Islands, medium.....	52 @	*44 @	44 @ 45
Islands, coarse.....	27 @	*21 @	21 @
Maidira, fine.....	53 @	55½ @	55 @
Acre Bolivian, fine.....	53 @	55 @	54½ @ 55
Cameté, coarse.....	21 @	*21 @	21 @
Cameté, fine.....	28 @	28 @	28 @
Tapajos fine.....	@	53½ @	53 @
CAUCHO—			
Lower cacho ball.....	36 @	29 @	29 @
Upriver cacho ball.....	40 @	48 @	31 @
MANICOBAS—			
Ceara negro heads.....	37 @	*34 @	*34 @
Ceara scrap.....	37 @	*29 @	*29 @
Mangabeira (bass, 30% loss washing and drying).....	36½ @	*32 @	*32 @
Mangabeira thin sheet.....	35 @	*38 @	*38 @
CENTRAIS—			
Corinto scrap.....	39 @	31 @	31 @
Esmeralda sausage.....	39 @	31 @	31 @
Central scrap.....	39 @	31 @	31 @
Central scrap and strip.....	@	29 @	29 @
Central wet sheet, 25%.....	@	25 @	23 @
Guayule, 20% guarantee.....	35 @	30 @	25 @
Guayule, dry.....	48 @	35 @	35 @
AFRICANS—			
Niger flake, prime.....	28 @	24 @	24 @
Benigula, extra No. 1, 28%.....	33 @	24 @	24 @
Benigula No. 2, 24½%.....	@	25 @	25 @
Congo prime, black upper.....	48 @	35 @	34½ @
Congo prime, red upper.....	48 @	35 @	34 @ 35
Rio Nunez ball.....	55 @	@	@
Rio Nunez sheets and strings	@	@	@
Conakry niggers.....	55 @	@	@
Massai sheets and strings.....	55 @	@	@
GUTTA PERCHA—			
Gutta Siak.....	28 @	22 @	20 @ 21
Red Macassar.....	2,60 @	2,60 @	2,50 @ 2,60
BALATA—			
Block, Ciudad Bolívar.....	71 @	78 @	70 @ 74
Colombia.....	61 @	61 @	56 @ 58
Panama.....	58 @	65 @	48 @ 48
Surinam sheet.....	93 @	93 @ 94	90 @ 92
Surinam amber.....	97 @	94 @ 95	92 @ 94

* Nominal.

RECLAIMED RUBBER.

The market is characterized by continued dullness. Purchasing is limited to routine orders, with no effort at anticipating future demands. There is slight activity in reclaims for insulation work and a fairly good market for the stock reclaims.

NEW YORK QUOTATIONS.

August 25, 1919.

Subject to change without notice.

Standard reclaims:			
Electric.....	26 @	23 @	
Friction.....	25 @	25 @	
Mechanical.....	11 @	12 @	
Shoe.....	20 @	20 @	
Tires, auto.....	15 @	15 @	
Truck.....	11½ @	11½ @	
White.....	24 @	24 @	

COMPARATIVE HIGH AND LOW SPOT RUBBER PRICES.

PLANTATIONS	1919. ¹		1918		1917	
	August.	August.	August.	August.	August.	August.
First class, range	\$0.45	\$0.41	\$0.63	\$0.63	\$0.65	\$0.56
Second class, outside	.44	.39	.60	.60	.65	.54
PARAS						
Grivier, fine	.55	.54	.68	.68	.70	.68
Grivier, coarse	.42	.40	.50	.50	.50	.47
Islands, fine	.40	.40	.50	.50	.50	.50
Islands, coarse	.31	.31	.37	.37	.30	.29
Sumatra	.31	.29	.38	.38	.37	.30

¹ Figures for August 26.

THE MARKET FOR COMMERCIAL PAPER.

In regard to the financial situation, Albert B. Beers, broker in crude rubber and commercial paper, No. 68 William street, New York City, advises as follows:

"During the first part of August the demand for paper was very light and mostly from out-of-town banks, the best rubber names going at 5½ to 6 per cent, and those not so well known 6 to 6½ per cent, but the latter part of the month rates eased a little to about 5½ to 5¾ per cent and 6 to 6½ per cent, respectively."

WEEKLY RUBBER REPORT.

GUTHRIE & CO., LIMITED, Singapore, report (July 10, 1919):

Notwithstanding advances of declining values in London and New York, the rubber market opened yesterday to a firm market. There was an unusually large number of buyers in the market, and keen competition was witnessed at intervals throughout the sale.

Rubber smoked sheet fully maintained last week's value of 67½ cents and 68/69 cents was paid for a few really fine lots. Fine pale crepe was in moderate demand and sold up to 67 cents (3 lots sold at 67½ cents) showing no change on the week. Clean brown and dark crepes were a shade weaker, while Barks crepes advanced two cents. The quantity cataloged was 907 tons, of which 587 tons were sold.

The following is the course of values:

	In Singapore, per Pound.	Sterling Equivalent per Pound in London.
Sheet, fine ribbed smoked	65c @ 67½	1 8½ @ 1/934
Sheet, good ribbed smoked	53 @ 64	1 7/64 @ 1/834
Crepe, fine pale	65 @ 67	1 9/64 @ 1/834
Crepe, good pale	53 @ 63½	1 5½ @ 1/834
Crepe, fine brown	50 @ 51½	1 4½ @ 1/634
Crepe, good brown	45 @ 50	1 3½ @ 1/474
Crepe, dark	40 @ 42	1 2 @ 1/334
Crepe, hark	30 @ 42	1 1½ @ 1/234

¹ Quoted in S. F. Currency—\$1 = \$6.567.

BATAVIA RUBBER MARKET.

HIEMANS, MARSMAN & CO., Batavia, report (May 15-June 15, 1919):

During the month under review the market was very quiet and buyers showed only very little interest in almost all qualities. The quotations received from the foreign markets showed a downward tendency. The markets closed with the following quotations:

	In Batavia Per ½-kilo. ¹	Equivalent Per ½-kilo in U. S. Currency.
Fine pale crepe	1.17	\$0.468
Prime smoked sheet	1.18	.472
Fine pale crepe, basis 75 per cent.	1.06	.424
Off crepe	0.89-1.12	.356-448

¹ Quoted per ½-kilo (1.1 lb.) in Dutch Indian guilders (\$0.40).

FEDERATED MALAY STATES RUBBER EXPORTS.

An official report from Kuala Lumpur states that 7,094 tons of rubber were exported from the Federated Malay States in the month of June, as compared with 7,308 tons in May and 5,161 tons in the corresponding month last year. The total export for six months of the present year was 39,476 tons, against 40,557 tons in 1918 and 39,476 tons in 1917. Appended are the comparative statistics:

	1917.	1918.	1919.
January	5,995	7,588	7,163
February	7,250	6,220	10,000
March	7,088	7,709	16,670
April	5,955	7,428	7,664
May	5,179	5,851	7,365
June	6,009	5,161	7,094
Totals	39,476	40,557	50,717

STRAITS SETTLEMENTS RUBBER EXPORTS.

An official report from Singapore states that 5,059 tons of rubber (of which 948 tons were transshipments), were exported from the Straits Settlements in the month of June, as compared with 15,845 tons in May and 6,716 tons in the corresponding month last year. The total export for six months of the present year was 82,725 tons, against 42,180 tons in 1918, and 39,516 tons in 1917. Appended are the comparative statistics:

	1917.	1918.	1919.
January	8,565	4,300	10,404
February	6,495	2,334	15,661
March	8,299	8,858	20,308
April	8,103	6,584	10,848
May	6,282	13,587	15,845
June	8,775	6,515	5,059
Totals	39,516	42,180	82,725

CEYLON RUBBER IMPORTS AND EXPORTS.

		January 1 to July 7.	
		1918.	1919.
IMPORTS.			
Crude rubber:			
From Straits Settlements	1,471,419	1,379,322	
India	1,419,061	705,489	
Burma and other countries	3,107		
Totals	2,893,587	2,084,811	
EXPORTS.			
Crude rubber:			
To United Kingdom	7,925,985	17,072,967	
Belgium		29,120	
France	100,642	330,010	
Victoria	434,749	89,795	
New South Wales	213,614	91,700	
United States	10,886,132	35,710,780	
Canada and Newfoundland	4,804,976	260,016	
India	2,279	2,313	
Straits Settlements		454	
Japan	145,578	144,026	
Totals	24,513,955	53,731,181	

¹ These figures include cargoes for transshipment to New Zealand, other parts of Australia, and dependencies.
(Compiled by the Ceylon Chamber of Commerce.)

PLANTATION RUBBER EXPORTS FROM JAVA.

		April.		Five months Ended April 30.	
		1918.	1919.	1918.	1919.
To Holland	1,882,000	1,882,000	1,659,000	2,901,000	
England				176,000	
France				176,000	
United States	72,000	1,586,000	2,131,000	6,621,000	
Canada		16,000		36,000	
Singapore	1,325,000	594,000	1,702,000	1,985,000	
Japan	16,000	53,000	254,000	178,000	
Australia		26,000		143,000	
Other countries				11,000	
Totals	1,413,000	4,157,000	5,746,000	12,171,000	
Ports of origin:					
Batavia	738,000	1,887,000	3,083,000	5,920,000	
Samarang	8,000	47,000	61,000	203,000	
Soerabaya	667,000	2,001,000	2,600,000	5,463,000	
Totals	1,413,000	3,935,000	5,744,000	11,586,000	

		May.		Five months Ended May 31.	
		1918.	1919.	1918.	1919.
To Holland	2,000	2,000	1,222,000		
England		780,000		3,681,000	
France				176,000	
(United States)	1,358,000	1,225,000	3,489,000	7,876,000	
Canada				36,000	
Singapore	1,315,000	546,000	3,017,000	3,804,000	
Japan	310,000	1,000	564,000	179,000	
Australia				143,000	
Other countries				11,000	
Totals	2,983,000	2,584,000	8,729,000	16,028,000	
Ports of origin:					
Batavia	1,347,000	1,678,000	4,421,000	7,598,000	
Samarang	28,000	41,000	90,000	204,000	
Soerabaya	1,607,000	865,000	4,208,000	6,328,000	
Totals	2,982,000	2,584,000	8,729,000	14,130,000	

PLANTATION RUBBER EXPORTS FROM MALAYA.

(These figures include the production of the Federated Malay States, but not of Ceylon.)

		January 1 to March 31.		Jan. 1 to Feb. 28.		Totals.	
		Singapore.	Malacca.	Swettenham.	Penang.		
To United Kingdom	13,561,300	16,629,197	3,512,400	32,702,797			
The Continent	6,307,300			6,507,200			
Japan	8,132,800			21,200	8,334,000		
Ceylon	50,000		844,024		89,024		
United States and Canada	90,528,400			2,052,400	92,580,800		
Australia	88,000				88,000		
China (Hong-kong)							
Other countries	64,800				64,800		
Totals	117,922,400	17,473,221	5,776,000	141,171,631			
For the year 1918	225,100,000	837,600		12,479,200	238,416,800		
For the year 1917	217,901,200	15,113,200		23,402,000	216,416,400		
For the year 1916	135,535,954	7,167,346	3,660,840	30,643,565	177,007,705		
For the year 1915	86,096,257	8,098,844	821,445	26,449,139	123,465,685		
For the year 1914	43,734,177	2,518,239	2,052,630	21,913,567	72,717,743		

(Compiled by Barlow & Co., Singapore.)

CRUDE RUBBER ARRIVALS AT ATLANTIC AND
PACIFIC PORTS AS STATED BY SHIPS'
MANIFESTS.

PARAS AND CAUCHO AT NEW YORK.

	Pounds.					Mixed	Total
	Fine.	Medium.	Coarse.	Cauch.	Rubber.	Pounds.	
August 5. By the S. S. <i>Ardan</i> , from Para, Manáos, Iquitos, and Cera.							
Poel & Kelly.....	100,941	15,871	7,572	7,984	5521	152,925	
General Rubber Co.....	114,340		6,730				120,960
Meyer & Brown, Inc.....	163,000		107,570				270,500
202,000.....			62,000	133,000	115,000		512,000
Fred Stern & Co.....			22,400				22,400
Gaston, Williams & Wigmore.....	10,890	968	2,892	3,146			17,996
Paid Berthak.....	3,254						3,674
Rax Products Co.....			968	2,486			3,454
F. R. Henderson.....			198				198
Aidens' successors.....		330	330				660
Vinter, Ross & Co.....	44	88	66	1,980			2,178
E. T. Greiner & Co.....	2,388	134	970	814			6,236
G. Amsnick & Co.....		66	374	330			946
Wm. Schall & Co.....	2,464						46,528
G. Armstrong & Co., Inc.....	1,590						17,650

AUGUST 12. By the *S. S. Tungus*, from Pernambuco.

Lawrence Johnson Co.	100	900
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AUGUST 18. By the <i>S. S. Mariana</i> , from Buenos Aires.		
Hammacher, Ludwig Co	1205	11 700

Various	2,464	3,036	2,530	10,340	18,370
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Various ^b	684 ^c	60,283
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² C. amicta.²Including medium.

'Islands coarse.

¹Packages.

Cases, bales and bags.

Barz.

PLANTATIONS.

(Figured 180 pounds net to the bale or case.)

	Shipment from:	Shipped to:	Pounds.	Totals.
JULY 16.	By the S. S. <i>Empress of Japan</i> , at New York.			
William H. Stiles & Co.	Singapore	New York	68,400	
Edward Maurer Co., Inc.	Singapore	New York	53,820	
				122,220

JULY 21. By the S. S. *Manera*, at New York.

General Rubber Co.....	Calcutta	New York	112,000
Chas. T. Wilson Co., Inc.....	Calcutta	New York	14,000
Meyer & Brown.....	Colombo	New York	224,000
The Goodyear Tire & Rubber Co.	Calcutta	Akron, O.	135,720
Poel & Kelly.....	Calcutta	New York	57,600
Rubber Trading Co.....	Calcutta	New York	22,000
Various			38,000
			634,540

JULY 23 By the S. S. *Slavic Prince*, at New York.

F. R. Henderson & Co.	Singapore	New York	927,600
F. R. Henderson & Co.	Penang	New York	170,100
The B. F. Goodrich Co.	Singapore	Akron, O.	916,380
The B. F. Goodrich Co.	Penang	Akron, O.	465,920
The B. F. Goodrich Co.	Malacca	Akron, O.	119,700
J. T. Johnstone & Co., Inc.	Singapore	New York	686,880
J. T. Johnstone & Co., Inc.	Belawan	New York	40,680

General Rubber Co.....	Singapore	New York
United States Rubber Co.	Singapore	New York

Chas. T. Wilson Co., Inc.	Singapore	New York	293,220
Chas. T. Wilson Co., Inc.	Penang	New York	177,120
William H. Stiles & Co.	Singapore	New York	227,520
Rubber Trading Co.....	Singapore	New York	273,280
Firestone Tire & Rubber Co.	Singapore	Akron, O.	104,400
W. G. Ryckman, Inc.....	Singapore	New York	78,840
Raw Products Co.....	Singapore	New York	30,240

Faultless Rubber Co....	Singapore	Ashland, O.
I. Littlejohn & Co., Inc.	Singapore	New York

Frederick & Co.	Singapore	New York	405,440
Fred Stern & Co.	Belawan	New York	405,440
Poel & Kelly	Singapore	New York	379,080
Hadden & Co.	Singapore	New York	364,320
United Malaysian Rubber Co., Ltd.	Singapore	New York	252,900
Curry, McPhillips & Co.	Singapore	New York	230,400
The Goodyear Tire & Rubber Co.	Singapore	New York	230,400

Rubber Co.	Singapore	Akron, O.
The Goodrich Tire A.		

Rubber Co.	Belawan	Akron, O.	101,340
Winter, Ross & Co.	Singapore	New York	195,660
Federal Products Co.	Singapore	New York	193,680
Jaeger & Co., Ltd.	Singapore	New York	188,900
Rubber Importers & Dealers' Co., Inc.	Singapore	New York	131,400

	Shipment from	Shipped to	Pounds.	Totals.
Thos. A. Desmond & Co.	Singapore	New York	129,960	
Edward Maurer Co., Inc.	Singapore	New York	128,880	
Gaston, Williams & Wigmore	Singapore	New York		
Paterson, Simmonds & Co.	Singapore	New York	104,220	
East Asiatic Co., Inc.	Singapore	New York	99,360	
Frank W. Taylor & Co.	Singapore	New York	61,200	
Swinchart Title & Rubber Co.	Singapore	New York	49,200	
Everett, Heaney & Co.	Singapore	Akron, O	42,840	
Meyer & Brown, Inc.	Singapore	New York	37,260	
Robinson & Fehr	Singapore	New York	33,600	
Vernon Metal & Produce Co.	Singapore	New York	28,800	
Far East Exporting Co., Inc.	Singapore	New York	24,480	
H. P. ...	Singapore	New York	19,500	
E. S. Kuhl & Valk Co.	Singapore	New York	17,460	
Thornett & Fehr	Belawan	New York	16,140	
Borner & Fehr	Singapore	New York	12,720	
Pacific Trading Corp. of America	Penang	New York	156,060	
Hook Rubber Co.	Penang	Watertown	119,620	
Widens' Successors, Ltd.	Penang	New York	81,000	
R. R. Grace & Co.	Penang	New York	73,500	
W. R. Grace & Co.	Pt. Swet ham	New York	28,980	
R. R. Grace & Co.	Singapore	New York	28,980	
Various	Singapore	New York	163,620	
Various	Pt. Swet ham	New York	97,500	
				1,352,680

July 24. By the S. S. *Furyhates* at New York.

The B. F. Goodrich Co.	Singapore	Akron, O.	1,193,120
The B. F. Goodrich Co.	Penang	Akron, O.	154,444
The B. F. Goodrich Co.	Malacca	Akron, O.	19,780
United States Rubber Co.	Singapore	New York	118,000
Chas. H. Wilson Co., Inc.	Singapore	New York	115,020
J. T. Johnstone & Co., Inc.	Singapore	New York	102,500
P. F. Heaton & Co.	Singapore	New York	88,700
Aldens' Successors, Ltd.	Singapore	New York	69,480
William H. Stiles & Co.	Pt. Swet'ham	New York	58,860
William H. Stiles & Co.	Singapore	New York	51,120
William H. Stiles & Co.	Teluk Anson	New York	36,600
William H. Stiles & Co.	Malacca	New York	18,720
William H. Stiles & Co.	Fort Dickson	New York	11,520
Swenney & Co., Inc.	Singapore	New York	27,000
Rubber Trading Co.	Singapore	New York	22,400
Hood Rubber Co.	Pt. Swet'ham	Watertown	2,340
Meyer & Brown, Inc.	Singapore	New York	728,000
L. Littlejohn & Co., Inc.	Singapore	New York	30,000
Littlejohn & Co., Inc.	Penang	New York	39,600
Frettern & Co.	Singapore	New York	284,480
Jaeger & Co., Ltd.	Singapore	New York	230,380
Radcliffe & Co.	Singapore	New York	184,000
Poel & Kelly	Singapore	New York	345,269
The Goodyear Tire & Rubber Co.	Penang	Akron, O.	173,340
The Goodyear Tire & Rubber Co.			

Rubber Co.	Delo	Atton, C.	1017.00
The Goodyear Tire &	Delo	Atton, C.	33.60

Rubber Co.	Pt. Swet'ham	Akron, O.	33,660
Edward Maurer Co., Inc.	Singapore	New York	126,000
Federal Products Co.	Singapore	New York	53,820
United Malaysian Rubber Co., Ltd.	Singapore	New York	50,760
Vernon Metal & Produce Co.	Singapore	New York	50,400
Puterson, Simmons & Co.	Singapore	New York	50,400
Winter, Ross & Co.	Singapore	New York	44,640
Winter, Ross & Co.	Penang	New York	28,840

Winter, Ross & Co.....	Malacca	New York	15,840
Winter, Ross & Co.....	Teluk Anson	New York	3,600

Swinhart Tire & Rubber Co.	Pt. Sweet ham	Akron	41,400
A. G. De Sherbinn & Co.	Singapore	New York	40,400
Thos. A. Desmond & Co.	Singapore	New York	30,320
East Asiatic Co., Inc.	Singapore	New York	27,000
Mexican Crude Rubber Co.	Pt. Sweet ham	New York	19,800
National Ammonia Co.	Pt. Sweet ham	New York	9,580
Various	Pt. Sweet ham	New York	84,600
	Singapore	New York	66,620

July 24	To the S. S. <i>Kaiser Mail</i> , via Hongkong, at San Francisco.			
Various	Penang	San Francisco	34,020	34,020
July 28	By the S. S. <i>Independence</i> , at New York.			
Curry, McPhillips & Co.	London	New York	153,900	
Various	London	New York	169,506	
July 29	By the S. S. <i>Empress of Russia</i> , at Vancouver.			

Federal Products Co. Singapore New York 107-10th

Meyer & Brown, Inc. . . .	Singapore	Vancouver	76.00
C. C. Trevanion & Co. . .	Colombo	Seattle	11.00
Various	Colombo	Seattle	11.00
			76.80
<p>Imported by the S. S. <i>Mano Mara</i>, from Yokohama, at Seattle and Tacoma</p>			
F. R. Henderson & Co. . .	Singapore	New York	100.00

The Goodyear Tire & Rubber Co. Ltd., Singapore New Toronto

Rubber Co., Ltd.	Kobe	Tacoma	7,280	778,76
Imperial Tire & Rubber Goods Co., Ltd.	Kobe			
In Osaka Shosen Kaisha.				

	Shipped from:	Shipped to:	Pounds.	Totals.		Shipped from:	Shipped to:	Pounds.	Totals.
The B. F. Goodrich Co.,	Singapore	Akron, O.	330,630		Head Rubber Co.,	Colombo	New York	11,800	
The B. F. Goodrich Co.,	Malacca	Akron, O.	239,160		L. Littlejohn & Co., Inc.	Colombo	New York	400,320	
					Meyer & Brown, Inc.,	Colombo	New York	224,000	
					C. C. Trevanion & Co.,	Colombo	New York	40,320	
					Poel & Kelly,	Colombo	New York	33,600	
					Fred Stern & Co.,	Colombo	New York	22,400	
					Various	Colombo	New York	57,600	
									864,960
AUGUST 18. By the S. S. <i>Proteasius</i> , from Yokohama, at Seattle.									
					Hongkong	New York	144,000		
					William H. Stiles & Co.,	Hongkong	New York	92,960	
					J. T. Johnstone & Co.,	Manila	Seattle	63,500	
					Charles T. Wilson Co.,	Sta. Settlements, Seattle		2,880	
					Inc.	Hongkong	New York	263,160	
					L. Littlejohn & Co., Inc.				
					The Goodyear Tire &	Hongkong	Vancouver	246,780	
					Rubber Co., Ltd.	Hongkong	Vancouver	19,800	
					Edward Maurer Co., Inc.	Sta. Settlements, Seattle		40,320	
					Various				873,400
BALATA.									
AUGUST 18. By the S. S. <i>Fuentes</i> , at New York.									
					Cristobal			1,963	1,963
AUGUST 18. By the S. S. <i>Polychrome</i> , at New York.									
					Various	London	New York	2,850	2,850
AUGUST 18. By the S. S. <i>Matara</i> .									
					Yglesias & Co., Inc.	Trinidad	New York	7,050	
					Middleton & Co.,	Trinidad	New York	4,500	
									11,550
AUGUST 4. By the S. S. <i>Frederick Hendrik</i> , at New York.									
					Wm. Schall & Co.,	Cape Haitien	New York	7,800	7,800
AUGUST 11. By the S. S. <i>Gaucha</i> , at New York.									
					Middleton & Co.,	Demerara	New York	1,650	
					Various	Demerara	New York	3,150	
									4,800
AUGUST 13. By the S. S. <i>Tropic</i> , at New York.									
					Earl Bros.	Liverpool	New York	3,750	3,750
AUGUST 14. By the S. S. <i>Mayara</i> , at New York.									
					American Trading Co.,	Trinidad	New York	50,100	
					South & Central Ameri-				14,300
					can Comm'l Co.,	Trinidad	New York	14,300	
					Yglesias & Co., Inc.	Trinidad	New York	8,700	
					Various	Demerara	New York	1,050	
									74,350
AUGUST 18. By the S. S. <i>Colon</i> , at New York.									
					Isaac Brandon & Bros.,	Panama City	New York	750	
					Various	Bahia	New York	10,200	
									10,950
CENTRALS.									
JULY 21. By the S. S. <i>Panama</i> , at New York.									
					G. Amsinek & Co., Inc.,	Cristobal	New York	900	
					Various	Cristobal	New York	900	
									1,800
JULY 22. By the S. S. <i>Tropic</i> , at New York.									
					G. Amsinek & Co., Inc.	Cristobal	New York	676	676
JULY 24. By the S. S. <i>Carib</i> , at New York.									
					Andean Trading Co.,	Port Colombia	New York	3,700	3,700
AUGUST 1. By the S. S. <i>Matara</i> , at New York.									
					G. Amsinek & Co., Inc.,	Trinidad	New York	71,700	
					Southern Sales Corpora-				3,600
					tion	Trinidad	New York		75,300
AUGUST 11. By the S. S. <i>San Jacinto</i> , at New York.									
					United States Rubber Ex-	Puerto	New York	14,100	
					port Co.,	Puerto	New York	900	
					Various				15,000
AUGUST 11. By the S. S. <i>Esparita</i> , from Costa Rica.									
					Various	Port Limon	New York	3,900	3,900
AUGUST 12. By the S. S. <i>Alamo</i> , at New York.									
					American Lead Co.,	Cartagena	New York	1,600	1,600
AUGUST 18. By the S. S. <i>Colon</i> , at New York.									
					Isaac Brandon & Bros.,	Panama City	New York	800	800
GUTTA PERCHA.									
JULY 23. By the S. S. <i>Slavic Prince</i> , at New York.									
					L. Littlejohn & Co., Inc.,	Singapore	New York	35,400	35,400
JULY 24. By the S. S. <i>Eurybates</i> , at New York.									
					L. Littlejohn & Co., Inc.,	Singapore	New York	127,200	127,200
AUGUST 4. By the S. S. <i>Celtic Prince</i> , at New York.									
					L. Littlejohn & Co., Inc.,	Singapore	New York	3,600	3,600
GUTTA SIAK.									
JULY 23, 1919. By the S. S. <i>Slavic Prince</i> , at New York.									
					United Malaysian Rubber	Singapore	New York	183,000	
					Co., Ltd.,	Singapore	New York	123,000	
					East Asiatic Co., Inc.,				306,000
AUGUST 4. By the S. S. <i>Celtic Prince</i> , at New York.									
					United Malaysian Rubber	Singapore	New York	60,000	60,000
					Co., Ltd.,				

	Shipped from:	Shipped to:	Pounds.	Totals.
GUTTAS.				
July 31 By the S. S. <i>Beacon</i> , at New York.				
Rubber Trading Co., Ltd., Liverpool		New York	13,500	13,500
Various		New York	1,500	1,500
MANICOBAS.				
July 12 By the S. S. <i>Ilwaco</i> , at New York.				
Adolph Hirsch & Co., Inc., Bahia		New York	18,188	18,188
PONTIANAK.				
July 23 By the S. S. <i>Sumatran Prince</i> , at New York.				
Firestone Tire & Rubber Co., Singapore		Albion	71,400	
United Malaysian Rubber Co., Ltd., Singapore		New York	394,800	466,200
Hadden & Co., Singapore		New York	243,600	
L. Littlejohn & Co., Inc., Singapore		New York	184,900	
Yager & Co., Ltd., Singapore		New York	102,600	
Edward Boustead & Co., Singapore		New York	39,700	
July 31 By the S. S. <i>Sumatran Prince</i> , at New York.				
Yager & Co., Ltd., Singapore		New York	476,700	
United Malaysian Rubber Co., Ltd., Singapore		New York	264,000	740,700
Kohler, Peabody & Co., Singapore		New York	151,200	
Fred Stern & Co., Singapore		New York	100,300	
Singhi & Co., Singapore		New York	28,700	
J. Littlejohn & Co., Inc., Singapore		New York	33,000	342,300

RUBBER STATISTICS FOR THE DOMINION OF CANADA.

IMPORTS OF CRUDE AND MANUFACTURED RUBBER.

	1918.		1919.	
	Pounds.	Value.	Pounds.	Value.
UNMANUFACTURED—free.				
Rubber, gutta percha, etc.:				
From United Kingdom			69,454	\$20,053
United States	945,805	\$456,354	307,854	131,662
British East Indies:				
Ceylon			44,709	16,095
India	41,902	22,731		
Straits Settlements	642,669	299,577	509,277	202,392
Other countries			13,036	5,589
Totals	1,630,376	\$778,662	944,330	\$375,791
Rubber, recovered	398,038	\$72,265	214,763	\$35,074
Hard rubber sheets and rods	3,334	2,601	6,254	4,057
Hard rubber tubes			2,281	2,124
Rubber, powdered, and rubber or gutta percha scrap	256,277	30,020	183,562	20,051
Rubber thread, not covered	3,031	4,423	940	1,402
Rubber substitute	117,312	19,471	160,866	15,456
Totals	777,992	\$131,421	566,385	\$78,164
Balata	13	\$15	19	\$28
Chicle	459,994	\$208,955	262,208	\$172,950
MANUFACTURED—dutiable.				
Boots and shoes		\$20,839		\$13,813
Waterproofed clothing		16,751		15,851
Belt, hose, and packing		43,369		24,565
Gloves and hot-water bottles		(1)		6,566
Tires		126,123		87,464
Other manufactures		131,077		167,580
Totals		\$338,159		\$315,839

EXPORTS OF DOMESTIC AND FOREIGN RUBBER GOODS.

	1918.		1919.	
	Produce of Canada.	Reexports of Foreign Goods.	Produce of Canada.	Reexports of Foreign Goods.
UNMANUFACTURED—				
Crude rubber				\$93,128
MANUFACTURED—				
Hose	\$18,369		\$3,514	
Boots and shoes	123,811		59,994	
Clothing			7,026	\$139
Tires	103,629	\$343	332,075	1,211
Waste	2,905		34,990	
Belt, hose, and packing			34	
All other manufactures	3,650	713	7,763	2,080
Totals	\$251,764	\$1,055	\$444,896	\$3,430
Chicle	\$123,503		\$36,473	

¹ Included in "Other manufactures."

	Shipped from:	Shipped to:	Pounds.	Totals.
August 4, By the S. S. <i>United Malaysian Rubber Co. Ltd.</i>				
Thos. A. Desmond & Co., L. Littlejohn & Co., Inc.	Singapore	New York	167,700	
	Singapore	New York	118,800	
	Singapore	New York	197,700	394,200
August 6, By the S. S. <i>Chicago</i>, at San Francisco.				
Yager & Co., Ltd.	Singapore	New York	283,500	
L. Littlejohn & Co., Inc.	Singapore	Seattle	21,300	
A. C. Fox & Co., Ltd.	Singapore	Seattle	12,240	
August 12, By the S. S. <i>Tokawa Maru</i>, at New York.				
G. Kawahara Co., Ltd.	Singapore	New York	138,900	
L. Littlejohn & Co., Inc.	Singapore	New York	96,600	
Pacific Trading Corp. of America	Singapore	New York	59,700	295,200

UNITED STATES CRUDE RUBBER IMPORTS FOR 1919 (BY MONTHS).

	Plants	Attri	Con	May	Mangoes	Totals
	tions.	cans.	trails	also	Matto	for
1919.					Grosso.	1919.
January	4,900	2,141	114	72	...	17,335
February	14,629	2,701	489	100	...	72,456
March	23,681	3,808	337	101	...	88,223
April	24,678	2,701	100	144	...	110,286
May	13,045	1,706	294	62	...	51,163
July	17,048	197	16	82	...	117,965

(Compiled by the Rubber Association of America, Inc.)

RUBBER STATISTICS FOR THE DOMINION OF CANADA.

IMPORTS OF CRUDE AND MANUFACTURED RUBBER.

	1918.		1919.	
	Pounds.	Value.	Pounds.	Value.
UNMANUFACTURED—free:				
Rubber, gutta percha, etc.:				
From United Kingdom	20,244	\$8,297	209,000	\$101,623
United States	734,808	389,091	321,887	139,710
Brazil				46,305
British East Indies:				
Ceylon				315,104
Straits Settlements	746,140	334,216	940,289	455,575
Totals	1,521,192	\$731,604	1,832,585	\$884,495
Rubber, recovered	132,682	\$27,571	179,771	\$29,667
Hard rubber sheets and rods	5,250	4,113	110,138	65,808
Hard rubber tubes			424	2,212
Rubber, powdered, and rubber or gutta percha scrap	345,868	23,600	93,671	4,596
Rubber thread, not covered	4,668	6,855	6,761	9,972
Rubber substitute	83,459	12,850	28,562	4,145
Totals	971,927	\$755,413	418,903	\$116,400
Balata	19	\$19		
Chicle	548,243	\$255,638	149,869	\$98,724
MANUFACTURED—dutiable.				
Boots and shoes		\$18,956		\$16,972
Waterproofed clothing		15,088		19,672
Belt, hose, and packing		62,068		30,590
Gloves and hot-water bottles		(1)		2,935
Tires		176,253		129,853
Other manufactures		184,997		186,604
Totals		\$457,362		\$386,246

EXPORTS OF DOMESTIC AND FOREIGN RUBBER GOODS.

	1918.		1919.	
	Produce of Canada.	Reexports of Foreign Goods.	Produce of Canada.	Reexports of Foreign Goods.
UNMANUFACTURED—				
Crude and waste rubber				\$400
MANUFACTURED—				
Hose	\$22,453		\$5,811	
Boots and shoes	139,141	887	31,460	
Clothing			3,568	\$204
Tires	59,811	2,077	413,348	1,000
Waste		744		63,020
All other manufactures	5,156	14,272	23,370	7,680
Total	\$227,413	\$16,436	\$540,577	\$8,884
Chicle	\$138,767		\$73,049	

¹ Included in "Other manufactures."

EXPORTS OF INDIA RUBBER MANUFACTURES AND INSULATED WIRE AND CABLE FROM THE UNITED STATES BY COUNTRIES, DURING THE MONTH OF JUNE, 1919.

COUNTRY	Belting Hose and Packing. Value.	Boots		Shoes		Drugs and Rubber Sundries. Value.	Tires		Insulated Wire and Cable. Value.	All Other Rubber Manu- factures. Value.	Totals. Value.
		Pairs.	Value.	Pairs.	Value.		Auto- mobile. Value.	All Others. Value.			
Europe:											
Austria-Hungary										\$5,306	\$5,306
Belgium	\$2,001					\$24,173	\$40,373		3,854	11,507	79,872
Denmark	11,374					\$113,699		2,124	48,688	12,914	221,458
France	21,006									184	22,090
Germany	2,046					19,628	24,270	33,185	64,889	317,018	8,890
Italy						856	414		7,171	941	4,308
Netherlands	1,678					34,895	16,681	234,790	32,192	33,292	
Norway	15,149					104,504	11,474	367,790	12,837	584,635	
Sweden	1,291	1	\$5			412	786	21,630	1,121	16,045	
Romania							570	2,470		141	3,184
Russia in Europe										75	75
Serbia, Montenegro, etc.							200			230	
Spain						4,613	104,160	2,562	16,866	3,557	168,988
Sweden	25,275					875	189,370	558	41,709	11,658	269,442
Switzerland										9,394	13,745
Turkey in Europe						504				1,783	
England	37,061	25,284	24,694	113,426	78,050	27,063	143,718	56,451	11,760	108,064	481,861
Scotland	571										
Ireland										1,072	1,073
TOTALS, EUROPE	\$118,388	25,285	\$24,699	274,760	\$199,710	\$40,373	\$917,434	\$157,749	\$284,757	\$295,850	\$2,538,960
North America:											
Bermuda										\$184	\$189
British Honduras	892			753	\$953	\$10	\$554	\$183		25	1,822
Canada	41,583	3,871	\$11,889	4,536	\$5,682	22,803	158,293	6,003	27,260	179,456	453,003
Costa Rica	1,028					54	678	104		402	
Guatemala	1,116			412	381	93	3,423	169	89	2,606	7,868
Honduras	1,847			321	820	36	1,491	3	723	259	4,780
Nicaragua	504			120	84	964	1,857		43	2,211	3,663
Panama	8,897	12	63	338	460	202	39,517	10,458	7,482	4,255	71,338
Salvador	1,422					154	4,668			1,196	7,870
Mexico	51,588	42	138	4,436	4,010	13,970	74,879	3,763	40,807	214,292	365,188
Monterrey, Langley, etc.	61	1,462	4,614	66	192						4,867
Newfoundland and Labrador	1,357	6,931	17,139	2,140	1,731		1,666	364	4,007	3,867	30,136
Barbados	61				690	520	108				1,416
Jamaica	515			1,113	676	106	10,897	205	159	501	13,059
Trinidad and Tobago	213	2	12	1,368	842	747	1,497	82	561	283	4,237
Other British West Indies	393			840	615	734	1,569			168	4,486
Cuba	30,801	79	96	30,152	17,019	6,080	97,390	20,756	12,138	32,124	216,448
Danish West Indies	153			24	27	4,21	875	7		257	1,740
Dutch West Indies	730				2	1,198			2,018	112	4,064
French West Indies	839						21,273	1,063	622	876	24,668
Haiti	198					56	6,477		5	401	7,187
Dominican Republic	1,039			528	608	289	9,030	768	789	993	13,490
TOTALS, NORTH AMERICA	\$144,404	12,399	\$33,971	47,147	\$33,600	\$46,550	\$437,692	\$44,050	\$97,281	\$256,743	\$1,093,940
South America:											
Argentina	\$62,403			3,681	\$3,970	\$30,407	\$470,123	\$11,634	\$251,165	\$57,334	\$877,022
Bolivia	62				1,082				1,887	37	3,063
Brazil	13,923			1,200	874	4,612	32,637	4,139	59,970	37,151	153,356
Chile	43,750	1,476	\$6,381	5,781	5,092	3,644	163,956	7,900	49,007	31,948	311,753
Colombia	211			165	178	279	9,925		4,335	947	15,865
Ecuador	1,425					626	9,547	66	1,561	262	13,487
British Guiana	670			300	219		1,788	524	580	127	3,914
Paraguay							64				64
Peru	5,668					543	23,309	86	7,311	1,572	38,489
Uruguay	1,359					1,899	10,438		57,591	4,177	74,140
Venezuela	4,376					1,226	22,654		1,957	1,875	32,092
TOTALS, SOUTH AMERICA	\$132,573	1,476	\$6,381	11,127	\$10,333	\$33,236	\$745,533	\$24,349	\$427,421	\$135,415	\$1,523,245
Asia:											
Aden										10	\$10
China	\$5,937	182	\$446	3,744	\$4,314	\$3,244		\$89	\$9,114	\$9,927	32,115
British China							\$28,417				28,417
Japanese China	88	658		935	990		1,000				2,903
Canton	945			144	107		175			62	1,289
British India	6,206			3,969	2,856	3,861	35,084	1,069	26,506	17,836	93,414
Straits Settlements	37	12		752	1,008	641	56,730	637	75,585	17,730	133,653
Other British East Indies	265					120	5,251			231	5,867
Dutch East Indies	4,405	2	15	300	387		28,507	354	6,383	4,592	45,045
French East Indies	11,320						466			1,244	21,229
Hong Kong		132	351	4,075	3,614	11	16,009				
Japan	20,474	8,361	13,240	34,610	27,099	713	57,052	1,347	1,388	31,905	153,211
Russia in Asia				24	85	3,056	262,263			5,934	269,423
Siam	975			230	276	41	549		10,423		15,119
TOTALS, ASIA	\$54,423	9,359	\$14,764	48,738	\$40,681	\$10,687	\$495,904	\$3,491	\$58,211	\$87,566	\$765,976
Oceania:											
Australia	\$4,000	240	\$832	93,340	\$63,031	\$6,735	\$126,071	\$6,238	\$6,000	\$15,045	\$244,252
New Zealand	4,625	1,252		3,731	6,387	2,630	131,145	4,892	2,113	8,407	164,401
Other British Oceania											37
French Oceania	709			30	40		611	149		156	1,668
German Oceania							545	158		1,468	2,171
Philippine Islands	38,643			2,558	3,714	335,952	12,376			73,517	498,831
TOTALS, OCEANIA	\$64,110	2,080	\$6,392	99,659	\$72,559	\$12,687	\$594,324	\$23,813	\$35,627	\$46,569	\$911,360

EXPORTED TO—	Belting, Hose and Fooling. Value.	Boots.		Shoes.		Druggists' Rubber Sundries. Value.	Tires.		Insulated Wire and Cable. Value.	All Other Rubber Manu- factures. Value.	Totals.
		Pairs.	Value.	Pairs.	Value.		Auto- mobile. Value.	All Others. Value.			
AFRICA											
Belgian Congo	\$11,903										\$11,903
British West Africa						\$204					204
British South Africa	53,664	729	\$2,510	25,248	\$21,676	\$2,919	28,588	85,512	\$5,540	\$1,887	136,292
British East Africa						4,988				45	5,033
French Africa							656				444
Italian Africa	2,500										2,500
Portuguese Africa	46							50			234
Egypt	1,492						11,101				38,325
TOTALS AFRICA	\$71,065	729	\$2,510	25,248	\$21,676	\$2,919	\$45,537	\$5,562	\$5,580	\$14,979	\$170,687
TOTALS	\$585,143	13,328	\$88,717	506,679	\$378,559	\$146,461	\$3,236,424	\$259,014	\$1,420,699	\$889,151	\$7,004,168

Compiled by the Bureau of Foreign Commerce, Department of Commerce, Washington, D. C.

OFFICIAL INDIA RUBBER STATISTICS FOR THE UNITED STATES

For the Fiscal Years 1917-18-19 and June 1918-19

IMPORTS OF CRUDE AND MANUFACTURED RUBBER.

[illegible]

EXPORTS OF DOMESTIC MERCHANDISE.

MANUFACTURED—		TOTALS OF FOREIGN MANUFACTURES		TOTALS OF ALL MANUFACTURES		
Automobile tires:						
To—						
France	\$104,028	\$192,628	\$435,151	\$661,648	\$3,227,830	
Russia in Europe			143,916	94,264	111	
United Kingdom	18,512	143,718	2,636,654	618,071	833,492	
Canada	334,672	158,293	1,485,939	1,766,518	961,352	
Mexico	84,348	74,879	537,413	772,984	1,003,137	
Cuba	108,500	97,390	1,019,915	1,336,233	2,009,263	
Argentina	292,422	470,000	1,361,343	1,649,846	1,837,884	
Brazil	88,480	32,637	696,876		607,319	
Chile		163,966			1,130,873	
British India	12,074	35,085	145,830	416,411	467,850	
Dutch East Indies	550	28,907	415,742	347,912	812,425	
Australia	190	126,677	783,209	819,755	880,118	
New Zealand	10,972	131,145	689,795	946,905	884,845	
Philippine Islands	60,290	335,952	345,702	863,727	1,412,499	
British South Africa	72,529	10,008	591,631		620,732	
Other countries	413,828	1,217,042	1,591,623	2,530,337	5,963,180	
All totals	\$1,891,865	\$2,336,424	\$12,330,201	\$13,977,671	\$22,630,200	
Of which—	\$89,240	\$259,014	\$2,547,632	\$1,130,623	\$1,266,069	
Scrap and old	lbs. 373,789	473,282	62,904	3,696,661	2,117,257	3,886,049
Reclaimed	lbs. 63,943	500,175	81,265	4,938,991	3,584,958	3,669,693
Rubber hose and packings	404,873	55,233				5,660,939
Rubber boots	pair 14,949	51,328	88,710	600,455	1,483,379	1,559,598
Other shoes	pair 83,307	506,679	378,559	3,356,484	1,716,225	1,244,170
Insulated wire and cables						913,128
Druggists' rubber sundries	82,251	146,461			884,245	
Other rubber manufactures	488,660	889,151	8,265,509		6,194,816	
Totals, manufactured	\$3,192,528	\$5,327,642	\$31,105,078	\$33,343,181	\$43,856,863	

EXPORTS OF FOREIGN MERCHANDISE.

June. LATEST MONTHS UNITED STATES.

	1918.		1919.		1917		1918.		1919	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
MANUFACTURED										
Belting, hose and packing..	.....	.....	22,335	\$15,155	87,763	\$47,438	473,915	\$303,338	572,178	\$344,267
Boots and shoes, pair.....	.....	.....	.....	.....	.....	.....	17,723	5,231	.....	475
Other rubber goods.....	60,410	\$6,002	.....	.....	.....	.....	72,255	9,619	5,037	912
Totals, manufactured.....	643,181	\$11,819	379,635	\$62,632	12,355,898	\$7,048,820	8,208,280	\$4,274,543	3,012,554	\$1,394,824
Belting, hose and packing.....	.....	.....	.....	.....	1,026	215	74,497	16,965	777	23
Totals, manufactured.....	.....	\$320,547	.....	\$177,787	.....	\$7,780,131	.....	\$4,050,907	.....	\$1,742,752
MANUFACTURED										
Belting, hose and packing.....	.....	.....	.....	\$63	.....	.....	.....	\$18,216	.....	\$15,597
Boots and shoes, pair.....	.....	.....	.....	.....	.....	.....	10,903	13,563	.....	16,946
Other rubber goods.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Totals, manufactured.....	.....	\$699	.....	\$62	.....	\$11,326	.....	\$31,776	.....	\$32,543
Substitutes, elastine and similar.....	.....	.....	50	\$131	.....	\$1,728	.....	\$11,098	716,342	\$54,954

EXPORTS OF RUBBER GOODS TO NON-CONTIGUOUS TERRITORIES OF THE UNITED STATES.

MANUFACTURED										
To Alaska.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Belting, hose and packing.....	.....	\$9,279	.....	\$11,818	.....	\$161,464	.....	\$122,583	.....	\$113,741
Boots and shoes, pair.....	5,884	26,994	6,796	19,164	111,045	27,688	78,600	217,877	75,348	186,915
Other rubber goods.....	.....	5,935	.....	5,109	.....	46,036	.....	79,411	.....	40,916
Totals.....	.....	\$42,208	.....	\$36,101	.....	\$480,188	.....	\$419,871	.....	\$341,572
To Hawaii.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Belting, hose and packing.....	.....	\$5,088	.....	\$15,398	.....	\$88,766	.....	\$104,231	.....	\$101,410
Tires.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
For automobiles.....	.....	\$7,043	.....	\$3,065	.....	\$735,786	.....	1,082,331	.....	1,041,059
Other tires.....	.....	5,064	.....	5,064	.....	5,064	.....	91,689	.....	32,244
Other rubber goods.....	.....	14,743	.....	21,472	.....	195,001	.....	226,404	.....	140,415
Totals.....	.....	\$81,936	.....	\$103,776	.....	\$1,105,487	.....	\$1,494,698	.....	\$1,315,128
To Philippine Islands.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Belting, hose and packing.....	.....	\$24,228	.....	\$38,643	.....	\$63,697	.....	\$150,092	.....	\$283,584
Boots and shoes, pair.....	2,518	1,095	3,146	4,459	28,846	200,376	256,069	179,044	193,127	160,600
Tires.....	61,345	348,318	.....	446,186	.....	1,018,782	.....	1,018,782	.....	1,554,745
Other rubber goods.....	13,051	.....	76,839	.....	114,395	.....	183,840	.....	.....	500,987
Totals.....	.....	\$100,619	.....	\$468,269	.....	\$824,654	.....	\$1,531,758	.....	\$2,499,376
To Porto Rico.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Belting, hose and packing.....	.....	\$6,816	.....	\$4,707	.....	\$52,118	.....	\$50,367	.....	\$54,710
Tires.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
For automobiles.....	.....	\$2,723	.....	\$6,343	.....	\$84,732	.....	772,650	.....	871,329
Other tires.....	.....	130	.....	3,182	.....	8,717	.....	14,803	.....	21,816
Other rubber goods.....	.....	13,072	.....	15,766	.....	104,563	.....	116,599	.....	138,715
Totals.....	.....	\$72,731	.....	\$89,998	.....	\$750,130	.....	\$954,415	.....	\$1,086,570

† July 1 to October 1. * Beginning November 1.

EXPORTS OF UNITED STATES RUBBER GOODS, CALENDAR YEAR 1918. (BY COUNTRIES.)

EXPORTED TO—	Belting Hose and Packing. Value.	Boots.		Shoes.		Tires Rubber Sundries. Value.	Automobile.		All Other. Value.	All Other Manufactures of Rubber Value.	Total Values
		Pairs.	Value.	Pairs.	Value.		Value.	Value.			
EUROPE:											
Belgium and Madeira Islands.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Austria.....	.....	5,990	\$32,705	.....	.....	.....	.....	.....	.....	.....	\$325
Denmark.....	\$15,390	1	.....	1	.....	.....	.....	.....	.....	.....	61,423
France.....	31,995	577,715	2,120,031	55,076	105,570	.....	.....	.....	.....	.....	8,059
Greece.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4,155,437
Iceland, and Faroe Islands.....	.....	2,627	5,868	12,238	9,546	.....	.....	.....	.....	.....	3,073
Italy.....	2,541	.....	.....	.....	.....	.....	.....	.....	.....	.....	16,833
Netherlands.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	259,463
Norway.....	27,672	12	.....	.....	.....	.....	.....	.....	.....	.....	215
Portugal.....	4,828	.....	.....	322	425	.....	.....	.....	.....	.....	40,279
Russia in Europe.....	.....	1,848	9,240	.....	.....	.....	.....	.....	.....	.....	20,231
Spain.....	4,393	460	2,029	3,656	1,81	.....	.....	.....	.....	.....	9,451
Sweden.....	4,960	.....	.....	.....	.....	.....	.....	.....	.....	.....	45,993
Switzerland.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	18,825
United Kingdom.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	14,039
Denmark.....	144,724	56,243	232,983	20,050	24,140	.....	.....	.....	.....	.....	1,401,920
TOTALS, EUROPE.....	\$222,084	644,896	\$2,402,541	91,581	\$142,672	\$131,685	\$1,192,542	\$73,820	\$1,890,824	\$6,055,568	.....
NORTH AMERICA:											
Bermuda.....	956	21	\$114	.....	.....	.....	.....	.....	.....	.....	.....
British Honduras.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Canada.....	511,381	57,313	169,566	18,919	722,994	.....	.....	.....	.....	.....	.....
Central American States.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Costa Rica.....	6,067	.....	.....	96	76	.....	.....	.....	.....	.....	16,357
Guatemala.....	7,275	.....	.....	2,075	3,766	.....	.....	.....	.....	.....	.....
Honduras.....	11,463	66	146	14,713	11,645	.....	.....	.....	.....	.....	.....
Nicaragua.....	7,858	.....	.....	5,037	1,698	.....	.....	.....	.....	.....	.....
Panama.....	79,545	6,146	7,127	31,695	29,080	.....	.....	.....	.....	.....	.....
Salvador.....	7,577	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Mexico.....	459,325	196	1,081	24,664	23,992	.....	.....	.....	.....	.....	.....
Miquelon, Langley, etc.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Newfoundland and Labrador.....	26,783	40,189	125,243	12,866	124,214	.....	.....	.....	.....	.....	.....
West Indies.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
British.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Bermuda.....	1,896	9	42	1,883	1,829	.....	.....	.....	.....	.....	.....
Jamaica.....	8,424	.....	.....	1,499	1,762	.....	.....	.....	.....	.....	.....
Trinidad and Tobago.....	8,618	.....	.....	3,087	2,123	.....	.....	.....	.....	.....	.....
Other British.....	2,241	.....	.....	4,738	3,824	.....	.....	.....	.....	.....	.....
China.....	386,069	1,391	1,888	85,993	65,922	.....	.....	.....	.....	.....	.....
Danish (Virgin Islands, the United States).....	1,182	.....	.....	731	878	.....	.....	.....	.....	.....	.....
Dominican Republic.....	17,894	.....	.....	1,792	2,116	.....	.....	.....	.....	.....	.....
French.....	831	.....	.....	453	402	.....	.....	.....	.....	.....	.....
German.....	2,611	.....	.....	688	695	.....	.....	.....	.....	.....	.....
Haiti.....	3,354	1	6	193	364	.....	.....	.....	.....	.....	.....
TOTALS, NORTH AMERICA.....	\$1,552,974	107,752	\$332,396	652,289	\$1,025,976	\$412,801	\$2,442,020	\$268,698	\$2,402,571	\$10,417,380	.....

EXPORTED TO—	Belted Hose and Packing. Value.	Boots.		Shoe.		Druggists' Rubber Sundries. Value.	Tires		All Other Manufacture of Rubber Value.	Total Values.
		Pairs.	Value.	Pairs.	Value.		Automobile. Value.	All Other. Value.		
SOUTH AMERICA:										
Argentina.....	\$163,077	2	\$8	7,706	\$6,181	\$35,425	\$1,429,647	\$89,519	\$165,544	\$1,889,401
Bolivia.....	43,595	.....	.....	36	21	90	31,678	411	2,381	78,176
Brazil.....	197,360	148	901	20,607	15,339	27,656	389,822	8,115	95,974	735,167
Chile.....	389,694	1,628	7,739	13,521	11,729	26,338	951,102	43,809	142,355	1,572,766
Colombia.....	20,578	12	38	1,443	1,254	1,941	49,630	7,374	17,020	97,841
Ecuador.....	8,292	.....	.....	1,648	1,626	3,005	47,379	592	6,296	67,190
Falkland Islands.....	2,400	.....	.....	.....	.....	.....	.....	.....	.....	2,400
Guiana—										
British.....	2,599	18	57	7,883	5,588	1,792	56,451	1,690	6,165	74,342
Dutch.....	1,327	3	7	192	143	415	3,776	826	1,532	8,029
French.....	41	.....	.....	.....	.....	.....	75	.....	.....	116
Paraguay.....	730	.....	.....	.....	.....	21	264	.....	515	1,530
Peru.....	82,348	189	977	1,073	1,192	4,621	205,887	1,495	26,557	323,077
Uruguay.....	28,036	24	80	2,400	2,004	3,913	213,290	101	19,523	266,947
Venezuela.....	8,411	72	312	544	633	7,592	136,881	2,789	22,362	178,980
TOTALS, SOUTH AMERICA.....	\$948,488	2,096	\$10,119	\$7,053	\$45,710	\$112,809	\$3,515,882	\$156,724	\$506,230	\$5,295,962
ASIA:										
Aden.....	.....	.....	.....	.....	.....	.....	\$2,536	.....	.....	\$2,536
China.....	\$74,840	6	\$32	4,390	\$3,738	\$13,697	71,558	\$1,148	\$32,328	197,341
China, leased territory—										
Japanese.....	.....	.....	.....	.....	.....	63	47	.....	562	972
Chosen.....	5,968	.....	.....	103	111	255	1,422	.....	43	8,188
East Indies—										
British—										
British India.....	47,489	144	547	6,426	5,205	18,231	294,619	9,447	45,213	420,751
Straits Settlements.....	7,051	12	36	1,167	1,210	1,206	510,881	4,110	10,464	534,598
Other British.....	1,482	.....	.....	225	293	12	54,429	1,910	5,421	63,547
Dutch.....	46,818	.....	.....	845	910	6,057	519,535	14,764	74,820	662,904
French.....	9,836	.....	.....	.....	.....	.....	5,114	355	238	11,943
Hongkong.....	13,259	347	1,344	4,862	3,314	2,217	18,458	894	4,606	44,195
Japan.....	346,516	4,500	11,420	67,330	65,082	4,819	118,685	16,747	129,559	692,828
Russia in Asia.....	.....	3	29	18	41	.....	8,806	1,436	1,782	12,097
Siam.....	64	.....	.....	.....	.....	217	20,762	.....	1,127	22,170
Turkey in Asia.....	.....	.....	.....	.....	.....	.....	1,967	.....	139	1,206
TOTALS, ASIA.....	\$553,323	5,012	\$13,408	\$5,306	\$79,904	\$46,874	\$1,624,319	\$50,814	\$306,994	\$2,675,636
OCEANIA:										
British—										
Australia.....	\$437,356	3,008	\$8,567	80,453	\$4,996	\$31,875	\$1,144,405	\$31,231	\$199,893	\$1,908,323
New Zealand.....	52,485	5,880	17,383	7,118	4,687	10,290	950,485	10,287	112,009	1,158,126
Other British.....	3	28	35	2,284	1,737	19	13,842	251	657	16,544
French.....	1,348	.....	.....	1,553	1,966	235	14,839	2,306	3,058	23,772
German.....	97	.....	.....	288	334	.....	6,188	122	1,746	8,487
Philippine Islands.....	213,517	623	1,911	188,305	150,924	18,341	982,024	133,513	259,465	1,759,895
TOTALS, OCEANIA.....	\$704,806	9,489	\$27,896	280,001	\$214,644	\$60,760	\$3,112,503	\$177,710	\$576,828	\$4,875,147
AFRICA:										
British Africa—										
West.....	\$6,175	96	\$192	133	\$130	.....	\$43,948	\$4,689	\$1,130	\$56,264
South.....	472,235	3,232	12,117	118,303	76,356	\$7,579	591,378	23,268	\$7,435	1,258,368
East.....	257	12	45	324	251	.....	5,116	88	18	5,875
Canary Islands.....	.....	.....	.....	.....	.....	.....	.....	.....	42	42
Egypt.....	360	.....	.....	.....	.....	.....	.....	.....	15	375
French Africa.....	13	.....	.....	.....	.....	.....	550	26	879	1,468
Liberia.....	.....	.....	.....	120	.....	1	.....	.....	.....	105
Madagascar.....	303	.....	.....	.....	.....	.....	565	.....	.....	868
Morocco.....	.....	.....	.....	.....	.....	.....	.....	.....	125	125
Portuguese Africa.....	64,225	1	2	.....	.....	30	2,698	51	1,034	68,040
TOTALS, AFRICA.....	\$543,568	3,341	\$12,356	118,880	\$76,841	\$7,610	\$644,355	\$28,122	\$78,678	\$1,391,530
*Calendar year, 1918.....	\$4,525,243	772,586	\$2,799,186	1,285,110	\$1,584,747	\$772,539	\$14,511,621	\$755,888	\$5,762,079	\$30,711,233
Fiscal year, 1917-18.....	\$4,578,396	1,559,598	\$4,861,213	1,244,170	\$913,128	\$884,245 ¹	\$13,977,671	\$1,130,623	\$6,194,816	\$32,540,092
Fiscal year, 1916-17.....	3,532,383	600,455	1,483,379	356,484	1,716,225	.....	12,330,201	2,547,652	8,265,509	29,875,349
Fiscal year, 1915-16.....	2,986,953	720,130	1,619,260	1,976,896	1,046,102	.....	17,936,227	3,003,077	7,290,345	33,881,964
Fiscal year, 1914-15.....	1,807,848	318,727	726,765	2,219,900	2,053,560	.....	4,963,270	\$76,602	\$3,525,486	\$13,653,331
Fiscal year, 1913-14.....	2,372,887	191,361	279,026	1,634,258	834,289	.....	3,505,267	563,372	3,453,472	11,008,493
Fiscal year, 1912-13.....	2,605,551	109,528	274,330	2,231,467	1,163,953	.....	3,943,220	611,458	3,913,036	12,511,548
Boots and Shoes ²										
Pairs.										
Fiscal year, 1911-12.....	\$2,315,484	.....	2,545,076	\$1,502,800	.....	.....	\$2,657,809	\$546,833	\$4,144,273	\$11,167,289
Fiscal year, 1910-11.....	2,163,416	.....	3,984,332	2,219,430	.....	.....	2,085,107 ³	\$92,470	3,886,825	10,947,248
Fiscal year, 1909-10.....	1,960,825	.....	3,791,084	1,844,739	.....	.....	.....	.....	5,115,331	9,060,895
Fiscal year, 1908-09.....	1,498,445	.....	2,396,435	1,292,673	.....	.....	.....	.....	3,623,956	6,615,074
Fiscal year, 1907-08.....	1,347,775	.....	3,080,253	1,614,290	.....	.....	.....	.....	\$7,740,040	6,705,105
Fiscal year, 1906-07.....	1,253,369	.....	2,310,420	1,231,898	.....	.....	.....	.....	3,729,643	6,214,910
Fiscal year, 1905-06.....	1,221,159	.....	2,693,690	1,505,083	.....	.....	.....	.....	2,966,144	5,692,385
Fiscal year, 1904-05.....	994,100	.....	2,390,539	1,214,342	.....	.....	.....	.....	\$5,732,375	4,790,817
Fiscal year, 1903-04.....	880,010	.....	2,310,420	1,231,898	.....	.....	.....	.....	3,729,643	6,214,910
Fiscal year, 1902-03.....	819,985	.....	2,307,460	1,056,401	.....	.....	.....	.....	\$7,799,875	4,176,351
Fiscal year, 1901-02.....	634,146	.....	2,594,708	1,046,315	.....	.....	.....	.....	\$1,881,941	1,466,332
Fiscal year, 1900-01.....	565,726	.....	1,459,100	724,015	.....	.....	.....	.....	1,727,527	3,017,268

¹ States separately after 1912. ² Tires were not specifically reported before 1910-11. ³ Druggists' rubber sundries were not specifically reported before 1917-18. * These figures are given for the calendar year beginning January 1, 1918, to December 31, 1918.

EXPORTS OF INDIA RUBBER FROM MANAOS DURING THE MONTH OF JUNE, 1919.

NEW YORK.

EUROPE.

EXPORTERS	Fine.	Medium.	Coarse.	Caucho.	TOTALS.	Fine.	Medium.	Coarse.	Caucho.	TOTALS.	GRAND TOTALS.
Stowell & Co., Inc., <i>Manaos</i>	46,602	4,904	36,639	480	88,625	81,453	1,930	2,240	51,377	75,547	164,365
Tanaredo, Porto & Co., <i>Manaos</i>	680	680	48,156	1,164	50,680	1,156	9,697	11,897	13,316	35,066	134,000
T. A. Mendes & Co., <i>Manaos</i>	.....	.....	.....	.....	.....	6,681	1,766	865	385	9,297	74,759
General Rubber Co. of Brazil, <i>Manaos</i>	8,886	16,341	2,006	12,314	39,547	17,611	2,192	4,88	23,458	48,146	62,081
Higon & Fall, <i>Manaos</i>	.....	20,640	.....	.....	20,640	27,370	.....	.....	.....	27,370	48,010
Adelbert H. Alden, Ltd., <i>Manaos</i>	.....	.....	.....	.....	.....	17,665	394	5,158	15,611	23,098	17,098
Vianna & Lora, <i>Manaos</i>	.....	960	.....	.....	960	10,320	.....	.....	.....	10,320	10,320
Totals, Manaos	54,944	44,015	87,701	13,958	200,618	222,559	64,080	29,736	123,996	440,371	640,989
In transit, Iquitos	16,754	24,453	8,059	22,490	71,756	16,877	25,450	7,978	38,557	88,862	160,618
Totals	71,698	68,468	95,760	36,448	272,374	239,436	89,530	37,714	162,553	529,233	801,607

(Compiled by Stowell & Co., Manaos, Brazil.)

EXPORTS OF INDIA RUBBER FROM MANAOS FROM JANUARY TO JUNE, 1919.

NEW YORK.

EUROPE.

EXPORTERS	Fine.	Medium.	Coarse.	Caucho.	TOTALS.	Fine.	Medium.	Coarse.	Caucho.	TOTALS.	GRAND TOTALS.
Tanaredo, Porto & Co., <i>Manaos</i>	494,813	139,028	355,512	231,647	1,221,000	593,474	123,466	20,666	1,394	739,000	1,960,000
T. A. Mendes & Co., <i>Manaos</i>	13,950	110,941	29,011	763,364	848,266	31,693	59,357	47,921	93,015	149,979	1,499,379
T. A. Mendes & Co., <i>Manaos</i>	78,082	109,687	147,518	85,334	420,591	896,072	8,400	.....	.....	904,472	1,325,063
General Rubber Co. of Brazil, <i>Manaos</i>	285,073	97,229	174,509	161,189	718,000	298,637	29,294	29,208	8,861	366,000	1,106,000
T. G. Ayauzo, <i>Manaos</i>	.....	30,960	10,240	41,200	82,400	38,878	38,878	19,172	131,078	190,128	1,300,000
Adelbert H. Alden, Ltd., <i>Manaos</i>	11,429	20,232	8,135	12,216	52,012	241,728	.....	.....	.....	241,728	297,740
Higon & Fall, <i>Manaos</i>	2,193	170	1,069	1,914	5,346	135,370	6,564	9,429	18,761	170,124	175,470
B. Levy & Co., <i>Manaos</i>	.....	.....	.....	.....	.....	68,163	6,600	33,249	11,515	119,127	1,122,312
T. Esabahi, <i>Manaos</i>	42,096	6,341	1,660	.....	50,000	19,034	2,140	1,465	.....	22,639	72,639
See. An. Armazens Androsia, <i>Manaos</i>	.....	.....	.....	.....	.....	9,881	.....	865	385	10,631	61,081
Paulo Levy & Co., <i>Manaos</i>	5,430	.....	12,690	260	18,380	14,510	1,850	4,526	10,915	31,771	18,380
Amorim Irmãos, <i>Manaos</i>	7,015	1,306	1,628	737	10,686	.....	.....	.....	.....	.....	10,686
Simfonia & Co., <i>Manaos</i>	1,181	1,247	199	.....	2,627	.....	.....	.....	.....	.....	9,627
Antônio Pereira, <i>Manaos</i>	.....	.....	.....	.....	.....	7,040	.....	.....	.....	7,040	7,040
Oscar Ramos, <i>Manaos</i>	.....	960	.....	.....	960	.....	.....	.....	.....	960	960
Vianna & Lora, <i>Manaos</i>	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Totals, Manaos	1,168,264	487,082	857,282	799,548	3,312,176	3,015,421	259,654	233,178	703,924	4,212,177	7,524,353
In transit, Iquitos	126,505	447,875	127,893	128,564	833,837	188,486	55,290	27,759	154,619	426,154	1,256,991
Totals	1,294,769	934,957	985,175	928,112	4,146,013	3,203,907	314,944	260,937	858,543	4,638,331	8,781,344

(Compiled by Stowell & Co., Manaos, Brazil.)

EXPORTS OF INDIA RUBBER FROM PARA, MANAOS AND IQUITOS, FROM JANUARY TO JUNE, 1919.

NEW YORK.

EUROPE.

EXPORTERS	Fine.	Medium.	Coarse.	Caucho.	TOTALS.	Fine.	Medium.	Coarse.	Caucho.	TOTALS.	GRAND TOTALS.
Stowell & Co., Inc., <i>Manaos</i>	465,006	117,593	427,985	245,408	1,255,142	719,370	26,688	85,786	262,213	1,088,057	2,343,199
I. Marques, <i>Manaos</i>	492,016	149,260	535,669	220,025	1,396,970	697,742	.....	.....	72,050	749,792	1,246,762
Santa Filha & Co., <i>Manaos</i>	657,424	307,331	83,562	420,697	1,469,014	157,899	55,278	55,278	598,272	1,370,065	1,370,065
General Rubber Co. of Brazil, <i>Manaos</i>	305,774	46,013	213,955	221,253	786,995	262,406	16,771	13,158	29,122	1,680,127	1,680,127
Adelbert H. Alden, Ltd., <i>Manaos</i>	94,184	57,351	176,071	68,498	396,104	384,755	.....	.....	10,142	395,897	790,001
B. Levy & Co., <i>Manaos</i>	114,064	30,731	103,614	195,430	444,839	54,206	4,000	13,463	113,883	195,430	1,305,064
F. Chamic & Co., <i>Manaos</i>	153,849	13,563	151,606	248,498	567,458	31,500	36,250	31,500	31,500	596,228	596,228
G. Fradelini & Co., <i>Manaos</i>	62,548	24,946	110,441	101,805	299,740	181,693	543	.....	.....	182,236	481,976
Alfredo Valle, <i>Manaos</i>	75,406	79,590	10,240	20,700	137,615	40,195	1,383	4,661	13,643	59,882	197,497
Pires, Teixeira & Co., <i>Manaos</i>	18,700	1,560	19,420	.....	39,530	.....	.....	.....	.....	39,530	39,530
Sundries, <i>Manaos</i>	31,975	16,646	117,854	366,198	526,673	111,332	3,078	35,026	41,958	191,384	1,011,557
Totals from Para	2,717,798	457,463	2,019,246	2,105,348	7,299,841	2,603,628	46,497	148,001	594,039	3,392,165	10,692,006
Tanaredo, Porto & Co., <i>Manaos</i>	233,697	110,982	123,402	294,011	762,092	509,889	51,693	9,357	376,434	778,373	1,540,737
T. A. Mendes & Co., <i>Manaos</i>	494,813	139,028	355,512	231,647	1,221,000	518,651	99,899	16,212	238	635,000	1,856,000
T. A. Mendes & Co., <i>Manaos</i>	98,992	89,647	147,518	85,334	420,591	896,072	8,400	.....	.....	904,472	1,325,063
General Rubber Co. of Brazil, <i>Manaos</i>	285,073	97,229	174,509	161,189	718,000	298,637	29,294	29,208	8,861	366,000	1,106,000
T. G. Ayauzo, <i>Manaos</i>	.....	30,960	10,240	41,200	82,400	38,878	38,878	19,172	131,078	190,128	1,300,000
Adelbert H. Alden, Ltd., <i>Manaos</i>	11,429	20,232	8,135	12,216	52,012	241,728	.....	.....	.....	241,728	297,740
Higon & Fall, <i>Manaos</i>	2,193	170	1,069	1,914	5,346	135,370	6,414	7,697	18,127	167,608	172,954
Sundries, <i>Manaos</i>	52,735	8,794	16,177	997	82,703	160,745	9,460	24,146	44,549	238,900	227,603
Totals from Manaos	1,188,904	465,482	857,283	799,547	3,311,216	2,348,297	223,680	173,868	494,018	3,739,863	7,051,079
From Iquitos	780,327	22,224	275,769	239,833	1,318,153	229,518	4,096	31,084	156,612	421,310	1,739,463
From Para for Lisbon	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	32,000
From Para for South America	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3,790
Totals	4,687,029	945,169	3,152,298	3,144,714	11,937,210	3,661,443	274,273	352,953	1,244,669	7,553,338	19,518,338

(Compiled by Stowell & Co., Para, Brazil.)

EXPORTS OF INDIA RUBBER FROM PARA, MANAOS AND IQUITOS DURING THE MONTH OF JULY, 1919.

NEW YORK.

EUROPE.

EXPORTERS	Fine.	Medium.	Coarse.	Caucho.	TOTALS.	Fine.	Medium.	Coarse.	Caucho.	TOTALS.	GRAND TOTALS.
I. Marques, <i>Manaos</i>	83,075	2,040	44,332	21,171	150,718	30,090	.....	.....	.....	30,090	180,808
Ferreira, Costa & Co., <i>Manaos</i>	48,990	4,915	5,081	20,997	100,122	.....	.....	.....	.....	.....	122,930
F. Chamic & Co., <i>Manaos</i>	28,546	7,480	33,150	13,630	80,227	.....	.....	.....	.....	.....	100,227
Stowell & Co., <i>Manaos</i>	48,121	7,440	12,767	3,659	71,987	.....	.....	.....	.....	.....	80,120
Alfredo Valle & Co., <i>Manaos</i>	16,830	8,440	38,128	16,348	79,746	.....	.....	9,481	.....	9,481	81,477
Santos, Villos & Co., <i>Manaos</i>	46,109	394	.....	27,151	73,654	.....	.....	.....	.....	.....	72,100
Bern & Lora, <i>Manaos</i>	2,736	.....	3,777	24,431	31,337	.....	.....	.....	20,800	20,800	52,137
Adelbert H. Alden, Ltd., <i>Manaos</i>	2,563	.....	2,752	.....	5,315	.....	.....	.....	.....	.....	5,315
Sundries, <i>Manaos</i>	47,908	.....	33,129	44,971	126,008	.....	.....	.....	.....	.....	126,008
From Para, <i>Manaos</i>	388,543	32,220	173,570	244,375	839,011	30,090	.....	9,481	20,800	60,371	899,382
From Manaos, <i>Manaos</i>	53,781	5,177	10,390	25,407	94,655	370,065	43,816	76,720	226,050	716,591	811,246
From Iquitos, <i>Manaos</i>	15,157	.....	17,907	19,390	52,454	28,052	728	7,425	47,992	84,197	136,655
Totals	457,781	37,397	201,767	289,175	986,120	432,287	44,724	96,006	299,972	872,989	1,859,109

(Compiled by Stowell & Co., Para, Brazil.)

RUBBER STATISTICS FOR ITALY.

IMPORTS OF CRUDE AND MANUFACTURED RUBBER.

	Three Months Ended March.			
	1918.		1919.	
	Quintals. ¹	Lire. ²	Quintals.	Lire.
UNMANUFACTURED—				
India rubber and gutta percha—				
raw and reclaimed:				
From Great Britain	1,174	.....	97	.....
India and Ceylon	517	.....	17,365	.....
Straits Settlements	3,433	.....	8,770	.....
French African Colonies	1,273	.....	1,007	.....
Brazil	1,292	.....	8,789	.....
Other countries	393	.....	233	.....
Totals	8,082	8,890,200	36,261	39,887,100
Rubber scrap	168	.....	20,160	.....
MANUFACTURED—				
India rubber and gutta percha—				
raw and reclaimed:				
Threads	56	123,200	90	198,000
Sheets:				
Cut sheets	.....	.....	1	2,200
Other kinds, including hard				
rubber	12	14,400	80	96,000
Tubes:				
Rubber coated fabric—pieces	51	45,800	12	10,800
Other forms	.....	.....	17	18,700
Beltting	17	139,700	81	89,100
For carding embs.	49	63,700	77	100,100
Other forms	.....	.....	.....	3,000
Boots and shoes—dozen pairs	236	6,832	7,722	81,264
Elastic webbing	55	110,000	86	172,000
Manufactures, n. e. s.				
From cut sheets	40	10,400	3	7,800
Elastic fabric	.....	.....	67.3	807,600
Tires and tubes:				
From France	838	.....	1,471	.....
Great Britain	179	1,855,200	1	2,653,200
Other countries	.....	.....	.....	.....
Other rubber manufactures:				
From France	888	.....	241	.....
Great Britain	395	1,666,800	3,587	4,602,000
United States	105	.....	6	.....
Other countries	1	.....	1	.....
Totals, manufactured	.....	4,491,432	.....	8,841,764
Total imports	.....	13,059,492	.....	48,728,864

EXPORTS OF CRUDE AND MANUFACTURED RUBBER.

	Three Months Ended March.			
	1918.		1919.	
	Quintals. ¹	Lire. ²	Quintals.	Lire.
UNMANUFACTURED—				
India rubber and gutta percha—				
raw and reclaimed:				
To Spain	585	245,000	1,632	653,100
United States	115	.....	234	.....
Totals	.....	245,000	.....	653,100
MANUFACTURED—				
India rubber and gutta percha—				
raw and reclaimed:				
Threads	18	39,000	84	184,800
Sheets:				
Cut sheets	6	12,000	22	44,000
Elastic fabric	20	16,000	1	800
Other kinds, including hard				
rubber	19	19,000	12	12,000
Tubes:				
Inner tubes	3	6,600	1	2,200
Hose	86	68,800	116	92,800
Other forms	45	35,000	64	72,200
Beltting	45	35,000	94	94,000
Rubber-coated fabrics—pieces	38	45,600	21	25,200
Elastic webbing	252	478,800	220	418,000
Manufactures of india rubber and				
gutta percha, n. e. s.				
From cut sheets	45	96,000	24	52,800
Elastic fabrics	51	56,100	45	49,500
Tires and tubes:				
To France	162	.....	80	.....
Great Britain	974	.....	794	.....
Spain	.....	.....	2	.....
Switzerland	.....	.....	1	.....
British India and Ceylon	.....	2,935,400	.....	3,607,500
Straits Settlements	.....	.....	130	.....
Australia	.....	.....	241	.....
Argentina	.....	.....	24	.....
Brazil	.....	.....	91	.....
Other countries	763	.....	652	.....
Other rubber manufactures:				
To France	70	.....	46	.....
Great Britain	86	.....	41	.....
Spain	.....	.....	1	.....
Switzerland	106	.....	28	.....
Egypt	21	384,000	5	403,000
Argentina	.....	.....	17	.....
Brazil	.....	.....	6	.....
Uruguay	.....	.....	4	.....
Other countries	58	.....	210	.....
Totals, manufactured	.....	4,256,700	.....	5,058,800
Total exports	.....	4,501,700	.....	5,711,900

UNITED KINGDOM RUBBER STATISTICS.

IMPORTS.

	June.			
	1918.		1919.	
	Pounds.	Value.	Pounds.	Value.
UNMANUFACTURED—				
Crude rubber:				
From				
Dutch East Indies	466,300	£55,468	4,740,500	£458,361
French West Africa	.....	.....	26,800	1,988
Gold Coast	9,900	865	47,700	3,711
Other African countries	122,500	11,390	214,700	21,077
Peru	.....	.....	2,452	23,000
Brazil	124,600	11,002	124,880	128,582
British India and Ceylon	463,600	52,928	661,300	62,933
Straits Settlements and de-				
pendencies, including La-				
buan	1,528,400	184,115	5,949,400	574,949
Federated Malay States	652,300	79,882	5,683,900	553,083
Ceylon and dependencies	117,207	3,208,500	324,497	.....
Other countries	182,700	21,455	185,300	18,531
Totals	4,541,500	£534,312	22,202,100	£2,168,632
Waste and reclaimed rubber	7,300	253	606,400	12,095
Totals, unmanufactured	4,548,800	£534,565	22,808,500	£2,180,727
MANUFACTURED	282,800	£56,399	461,400	£111,262
Boots and shoes, dozen pairs	2,833	£23,714	3,391	£5,477
Waterproofed clothing	.....	6,487	.....	27,075
Submarine cables	.....	36,577	.....	103,528
Motorcycle tires and tubes	.....	.....	.....	817
Bicycle tires and tubes	.....	.....	.....	1,491
Totals	.....	£66,778	.....	£115,118
EXPORTS.				
Waste and reclaimed rubber	442,200	£10,956	1,610,200	£24,465
MANUFACTURED				
Waterproofed clothing	.....	36,407	.....	108,285
Boots and shoes, dozen pairs	7,705	11,540	11,747	23,634
Insulated wire	.....	6,662	.....	96,028
Submarine cables	.....	17,200	.....	38,990
Carriage tires and tubes	.....	15,572	.....	16,747
Automobile tires and tubes	.....	107,082	.....	239,165
Motorcycle tires and tubes	.....	13,081	.....	12,111
Bicycle tires and tubes	.....	31,826	.....	134,522
Other rubber manufactures	.....	103,028	.....	247,155
Totals	.....	£342,398	.....	£916,660

EXPORTS—COLONIAL AND FOREIGN.

UNMANUFACTURED—				
Crude rubber:				
To Belgium	.....	.....	775,700	£67,334
France	1,343,869	£155,944	2,255,700	246,093
Italy	373,700	49,580	113,700	13,953
Russia	.....	.....	27,300	4,406
United States	414,400	49,374	1,164,700	109,830
Other countries	237,200	25,994	3,254,000	375,995
Totals	2,369,100	£280,892	8,614,400	£927,265
Waste and reclaimed rubber	22,400	600	719	3,340
Totals	2,391,500	£281,492	8,686,300	£930,605
MANUFACTURED	4,000	£933	70,500	£12,234
Boots and shoes, dozen pairs	.....	.....	76	192
Insulated wire	.....	.....	.....	27
Automobile tires and tubes	.....	1,303	.....	9,949
Motorcycle tires and tubes	.....	326	.....	450
Bicycle tires and tubes	.....	395	.....	2,584
Carriage tires and tubes	.....	522	.....	48
Totals	.....	£2,636	.....	£13,241

MARKET FOR COTTON AND OTHER FABRICS.

NEW YORK.

AFTER A SHORT FLURRY at the end of July and beginning of August middling spot cotton fell to 31.50 cents, a price to which it clung steadily until August 25, when it advanced to 32.15 cents, due to rumors of a poor crop. The estimate of the crop, which is below middling in quality, is about 11,640,000 round bales. Considering that crops have been short for four consecutive years there would be a cotton panic were it not for the war conditions hitherto and for the present scarcity of ocean transportation.

EGYPTIAN COTTON is coming in in small quantities, the whole cotton crop is needed in England to enable the mills to return to the output of the years before the war. The Alexandria market shows weakness, prices ranging from 59 to 62 cents for Sakellaris and from 55 to 56 cents for Upper Egyptian, with little business done. A little Egyptian is being doled out to American buyers. The fall in sterling exchange should encourage trading. The market will probably continue unsettled till

A quintal=220.46 pounds.

A lira=\$0.193.

the new crop begins to come down in quantities in October and November.

SEA ISLAND COTTON.—This must be left out of consideration this year. The old crop is practically exhausted, while the boll weevil has worked havoc with the new crop, which will amount in all likelihood to less than 20,000 bales this year, so that the tire fabric industry must turn elsewhere for material. The Meade cotton which has been raised as a substitute has not proved popular.

AMERICAN-EGYPTIAN.—The cotton that is free will not make up for the Sea Island shortage. The crop this year is late, and will hardly begin to move before September. The rains have had a bad effect, but the crop will be larger than any the Southwest has previously raised; from 45,000 to 50,000 bales is the estimate. No forward business has been doing.

TIRE FABRICS.—The market is very strong, the product of the mills has been sold, and the factories, though they are working to their limit, will be unable to supply the demand. No new factory equipment has been built lately, while labor troubles have cut the working time from 54 hours to 48 hours a week, thus reducing production. Staple cotton is scarce, and while manufacturers are using peelers as a substitute, some factories prefer to restrict production rather than continue with the inferior material. Little business is being done for next year though great interest is shown the 1920 possibilities.

OTHER FABRICS.—Belting and hose duck have been quiet until last week; lately the market has been fairly active. There is a strong demand for sheetings, which are sold out to the end of the year. No demand for Osnauburgs. Carriage cloth is very scarce, the mills are sold out practically till the middle of 1920. Yarn prices are high and firm, and advancing rapidly.

NEW YORK QUOTATIONS.

AUGUST 25, 1919.

Prices subject to change without notice.

ASBESTOS CLOTHS			
Brake lining, 2½ lbs. sq. yd., brass or copper inser-			
tion	lb.	.85	@
2½ lbs. sq. yd., brass or copper inser-			
tion	lb.	.90	@

BURLAPS:			
32-7-ounce	100 yards	13.00	@
32-8-ounce		13.50	@
40-7½-ounce		15.30	@
40-8-ounce		15.50	@
40-10-ounce		17.50	@
40-10½-ounce		17.75	@
45-8-ounce		18.00	@
45-9½-ounce		None	
48-10-ounce		20.00	@

DRILLS:			
38-inch 2.00-yard	yard	.37½	@
40-inch 2.47-yard		.31½	@
52-inch 1.90-yard		.42½	@
52-inch 1.95-yard		.41	@
60-inch 1.52-yard		.52½	@

DUCK:			
CARRIAGE CLOTH:			
38-inch 2.00-yard enameling duck	yard	.36½	@
38-inch 1.74-yard		.41½	@
72-inch 16.66-ounce		.83½	@
72-inch 17.21-ounce		.86	@

MECHANICAL:			
Hose	pound	.65	@
Belting		.70	@

HOLLANDS, 40-INCH:			
Acme	yard	.30	@
Endurance		.38	@
Penn		.46	@

OSNAUBURG:			
40-inch 2.35-yard	yard	.29½	@
40-inch 2.48-yard		.28½	@
37½-inch 2.42-yard		.28½	@

RAINCOAT FABRICS:			
COTTON:			
Bombazine 64 x 60 water-repellent	yard	.24	@
60 x 48 not water-repellent		.21	@
Cashmeres, cotton and wool, 36-inch, tan		.80	@ .85
cotton, blue and black		.44	@ .45
Twills 64 x 72		.40	@
64 x 102		.42	@
Twill, mercerized, 36-inch		.42½	@
Twed		.55	@ .70
printed		.20	@ .25
Plaids 60 x 48		.30	@
56 x 44		.19	@
Repp		.42	@ .49
Surface prints 60 x 48		.21	@
64 x 60		.22	@

IMPORTED WOOLEN FABRICS SPECIALLY PREPARED FOR RUBBERIZING

—PLAIN AND FANCIES:

63-inch, 3¼ to 7½ ounces	yard	1.30	@ 3.50
36-inch, 2¼ to 5 ounces		.75	@ 1.90

COMPARATIVE SUMMARY—COTTON AND LINTER PRODUCTION: CROPS OF 1899 TO 1918.

Growth year.	Cotton (exclusive of linters).				Linters.			
	Running bales, counting round as half bales	Equivalent 500-pound bales.	Total.	Running bales.			Running bales. (9)	Equivalent 500 pound bales. (9)
				Upland.		Sea Island.		
				Square.	Round.			
1918	11,906,480	12,040,532	11,983,582	11,777,170	154,204	52,208	1,096,422	1,125,719
1917	11,248,242	11,302,375	11,342,780	11,061,005	189,076	92,619	1,300,163	1,330,714
1916	11,362,915	11,460,930	11,460,084	11,150,186	192,339	117,559	944,640	931,141
1915	11,068,173	11,191,820	11,124,031	10,920,471	111,716	91,844	832,401	856,900
1914	15,905,840	16,134,930	15,934,649	15,795,377	57,618	81,654		
1913	13,982,811	14,156,486	14,032,792	13,855,267	99,962	77,563	631,153	638,881
1912	13,488,539	13,703,421	13,529,303	13,373,998	115,228	73,777	662,324	669,594
1911	15,553,073	15,692,701	15,603,850	15,383,003	101,554	119,293	556,276	572,775
1910	11,568,334	11,668,616	11,624,777	11,421,522	112,887	90,368	397,628	397,072
1909	10,072,731	10,004,949	10,148,076	9,902,595	150,690	94,791	313,478	310,433
1908	13,086,005	13,241,799	13,207,157	12,870,994	242,305	93,858	346,126	345,507
1907	11,057,822	11,107,179	11,157,096	10,871,652	198,549	86,895	268,060	268,282
1906	12,982,209	13,274,809	13,117,310	12,791,541	268,219	67,530	322,064	321,689
1905	10,491,005	10,575,017	10,635,023	10,242,648	279,836	112,539	230,497	229,539
1904	13,451,337	13,438,012	13,599,412	13,198,944	296,151	104,317	245,973	241,942
1903	9,819,569	9,851,129	10,205,073	9,359,472	770,208	75,393	195,752	194,486
1902	10,588,250	10,630,945	11,078,882	9,992,665	981,264	104,953	196,223	196,223
1901	9,582,370	9,569,745	9,954,945	9,132,215	744,851	77,879	166,026	166,026
1900	10,102,102	10,123,027	10,486,148	9,943,762	768,092	88,294	143,500	143,500
1899	9,393,242	9,345,391	9,645,974	9,043,231	505,464	97,279	114,544	114,544

¹ Includes 36,187 American-Egyptian bales.

² Monthly reports now collected from oil mills, total linter production not available until close of season—876,990 equivalent 500-pound bales produced from August 1, 1918, to April 30, 1919.

IMPORTED PLAID LINING (UNION AND COTTON):

63-inch, 2 to 4 ounces.....	yard	90	@ 1.85
36-inch, 2 to 4 ounces.....	yard	55	@ 1.10

DOMESTIC WORSTED FABRICS:

36-inch, 4½ to 8 ounces.....	yard	65	@ 1.20
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DOMESTIC WOVEN PLAID LININGS (COTTON):

36-inch, 3¼ to 5 ounces.....	yard	21	@ .32
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SHEETINGS:

40-inch, 2.35-yard.....	and	31½	@
40-inch, 2.50-yard.....		29¼	@
40-inch, 2.70-yard.....		27¼	@
40-inch, 2.85-yard.....		26	@
40-inch, 3.15-yard.....		27¼	@
40-inch, 3.60-yard.....		23¼	@

JACKET:

Delaware.....	yard	32	@
Schuykill.....	yard	37	@

SILES:

Canton, 38-inch.....	yard	52½	@
Schappe, 36-inch.....	yard	72½	@

TIRE FABRICS:

17½-ounce Sea Island, combed.....	ounce	1.45	@
17½-ounce Egyptian, combed.....		1.20	@
17½-ounce Egyptian, carded.....		*1.12	@
17½-ounce Peelers, combed.....		*1.18	@
17½-ounce Peelers, carded.....		.95	@

*Nominal.

TIRE FABRICS

JENCKES SPINNING COMPANY

PAWTUCKET
RHODE ISLAND

AKRON OFFICE
407 Peoples Savings & Trust
Co. Building.

SEA ISLAND COTTON CROP MOVEMENT.

FROM AUGUST 1, 1918, TO JULY 31, 1919.

Receipts.

Stock August 1, 1918:					
Savannah, 15,247; Charleston, 517; Jacksonville, 16,516.....	bales	1918-19.	1917-18.		
Received at Savannah (gross).....		25,780	1,040		
Received at Charleston.....		16,156	32,022		
Received at Jacksonville.....		10,667	6,971		
Received at Brunswick.....		12,678	40,146		
Received at interior points and shipped direct to Southern mills.....		300			
		5,735	7,856		

Totals.....		70,416	88,339		
Less total exports.....		53,294	62,559		

Stock July 31, 1919:

Savannah, 4,901; Charleston, 90; Jacksonville, 10,131.....		15,122	25,780		
Crop grown according to final ginners' report.....		52,208	92,501		

EXPORTS, 1918-19.

From -	To				Burned.	Totals.
	Great Britain	Continent.	North Mills.	South Mills.		
Savannah.....	723	160	22,625	2,628	366	26,502
Charleston.....	371	237	9,338	548		10,494
Jacksonville.....			12,563			12,563
Interior points.....				5,735		5,735
Totals.....	1,094	397	44,526	8,911	366	55,294

COMPARATIVE STATEMENT OF EXPORTS FOR PAST SIX YEARS.

	1913-14	1914-15	1915-16	1916-17	1917-18	1918-19
To—						
Great Britain.....	1,749	1,922	1,667	1,423	757	1,094
Continent.....	8,533	1,991	1,090	173	142	397
Domestic, North mills.....	67,636	60,879	60,832	48,496	50,280	44,451
Domestic, South mills.....	14,447	15,409	21,697	24,367	11,410	8,911
Burned.....						366
Totals.....	98,645	80,261	85,246	114,573	62,559	55,219

COMPARATIVE STATEMENT OF CROP GROWN FOR PAST SIX YEARS.

	1913-14	1914-15	1915-16	1916-17	1917-18	1918-19
To—						
South Carolina.....	8,670	5,590	6,178	3,486	7,313	9,964
Georgia and Florida.....	68,820	76,008	85,742	114,938	85,188	41,425
Totals.....	77,490	81,598	91,920	117,544	92,501	51,389

(Compiled by John Malloch & Co., Savannah, Georgia.)

EGYPTIAN COTTON CROP MOVEMENT.

FROM AUGUST 1, 1918, TO JULY 9, 1919.

To	1918-1919.				1916-1917.
	1918-1919.	1918-1919.	1918-1919.	1918-1919.	
Liverpool.....	275,648	234,849	214,726		
Manchester.....	118,870	118,404	131,609		
Other United Kingdom ports.....	5,337	136,951			
Total shipments to Great Britain.....	350,055	480,204	346,335		
To France.....	54,803	25,483	27,735		
Spain.....	15,890	8,085	10,321		
Italy.....	39,839	28,529	31,603		
Switzerland.....			31,731		
Russia.....			31,731		
Greece.....	4,463	2,700	65		
Total shipments to Continent.....	136,568	71,324	121,343		
To United States.....	65,239	75,430	120,731		
India.....			100		
Japan.....	21,329	14,514	11,135		
Total shipments to all parts.....	573,182	641,462	599,664		
Total crop (interior gross weight), cantars.....		6,315,841	5,126,199		

*A cantar equals 98 pounds.

(Compiled by Davies, Benachi & Co.)

THE MARKET FOR CHEMICALS AND COMPOUNDING INGREDIENTS.

NEW YORK.

DURING THE PAST MONTH the demand for chemicals and compounding ingredients has been generally brisk in all items, and present conditions indicate a steady continuance of the demand.

ANILINE OIL.—There has been a distinct advance in price as indicated last month. This may later affect the price of such accelerators as are derived from aniline.

BARYTES.—The demand is good, and the price steady at about \$21.50 per ton.

BENZOL.—There has been a very active consumption, and prices have advanced one cent per gallon.

CARBON TETRACHLORIDE.—Business has continued dull through the month and prices weak.

DRY COLORS.—The market has continued to improve, and at the close, inquiries from the rubber trade indicate the existence of a very good demand.

LITHARGE.—The market on all lead products is very active and consumers' demands are taxing output.

LITHOPONE.—Production is practically sold up, and manufacturers are experiencing difficulty in meeting consumers' requirements. In fact, there is an excess of business being offered.

MAGNESIA.—This material is experiencing a renewal of favor with rubber manufacturers. The more active call will probably result in an increase in the price of the product.

MINERAL RUBBER.—There has developed a pronounced increase in export sales in mineral rubber in addition to large domestic consumption.

SUBLIMED LEAD.—The same conditions rule with this material as in the case of litharge and white lead, producing firm prices.

WHITING.—The market is well maintained at firm prices.

ZINC OXIDE.—The reaction of the automobile tire industry is reflected particularly in the brisk demand for zinc oxide.

NEW YORK QUOTATIONS.

AUGUST 25, 1919.

Prices subject to change without notice.

ACCELERATORS, ORGANIC.

Accelerator, N. C. C.	lb.	.50	@
Acucelerene	lb.	3.70	@
Acemel	lb.	.55	@
Aldehyde ammonia crystals.	lb.	1.00	@ 1.55
Aniline oil	lb.	.26	@ .27
Excellerex	lb.	.85	@ .86
Hexamethylene tetramine (powdered).	lb.	.93	@ 1.05
Paraphenylenediamine	lb.	3.50	@
Thiocarbamide	lb.	.50	@

ACCELERATORS, INORGANIC.

Lead, dry red (bbls.)	lb.	.10%	@
sublimed blue (bbls.)	lb.	.08%	@
sublimed white (bbls.)	lb.	.08%	@
white, basic carbonate (bbls.)	lb.	.09	@
Lime, flour	lb.	.01%	@
Litharge, domestic	lb.	.09%	@
sublimed	lb.	.10	@
Magnesium, carbonate	lb.	.12%	@
calcined heavy (Thistle)	lb.	.11	@
light (Manhattan)	lb.	.35	@
Magnesium oxide	lb.	.62	@
Magnesite	lb.	.94	@

ACIDS.

Acetic, 28 per cent (bbls.)	lb.	.03	@
glacial, 99 per cent (carboys)	lb.	.12	@
Cresylic (97% straw color)	gal.	.85	@ .90
(95% dark)	gal.	.80	@ .85
Muriatic, 20 degrees	cwt.	17.5	@ 2.00
Nitric, 36 degrees	lb.	.05%	@
Sulphuric, 66 degrees	lb.	.01%	@ .02

ALKALIES.

Caustic soda, 76 per cent (bbls.)	lb.	.04%	@
Soda ash (bbls.)	lb.	.03%	@

COLORS.

Black:			
Bone, powdered	lb.	.05	@
granulated	lb.	.09	@
Carbon black (sacks, factory)	lb.	.12	@
Drop	lb.	.10	@
Ivory black	lb.	.17	@
Lampblack	lb.	.16	@
Oil soluble aniline	lb.	*.40	@
Rubber black	lb.	.07	@

BLUES.

Cobalt	lb.	.25	@ .35
Prussian	lb.	.65	@ .75
Ultramarine	lb.	.18	@ .40

BROWN.

Iron oxide	lb.	.03	@ .06
Sienna, Italian, raw and burnt	lb.	.06	@ .15
Umber, Turkey, raw and burnt	lb.	.05	@ .06
Vandyke	lb.	.02%	@ .03%

GREEN.

Chrome, light	lb.	.35	@ .40
medium	lb.	.40	@ .50
dark	lb.	.50	@ .60
commercial	lb.	.07	@ .15
Oxide of chromium (casks)	lb.	.75	@ .85

RED.

Antimony, crimson, sulphuret of (casks)	lb.	.45	@
Antimony, golden sulphuret of (casks)	lb.	.25	@
golden sulphuret (States)	lb.	.28	@
red sulphuret (States)	lb.	.25	@
vermilion sulphuret	lb.	.55	@
Arsenic, red sulphide	lb.	.25	@
Indian	lb.	.08	@
Toulundine toner	lb.	4.00	@ 4.50
Iron oxide, reduced grades	lb.	.14	@
pure bright	lb.	.16	@
Spanish	lb.	.04%	@ .05
Venetian	lb.	.02	@ .04
Oil soluble aniline, red	lb.	1.80	@
orange	lb.	1.25	@
Oximony	lb.	.18	@
Vermilion, English, pale, medium, dark.	lb.	1.70	@
artificial	lb.	.35	@ 1.40

WHITE.

Aluminum bronze, C. P.	lb.	.58	@
superior	lb.	.55	@
Lithopon, domestic	lb.	.06%	@ .07
Ponolith (carloads, factory)	lb.	*.07	@ .07%
Rubber-makers' white	lb.	.06%	@ .06%

Zinc oxide, Horsehead (less carload, factory):

"XX red"	lb.	.09%	@
"Special"	lb.	.09%	@
French process, red seal	lb.	.09%	@
green seal	lb.	.10%	@
white seal	lb.	.11%	@
(States)	lb.	.08%	@
Azo, ZZZ, lead free (less carload factory)	lb.	.09%	@
ZZ, under 5% leaded (less carload factory)	lb.	.08%	@
Z, 8-10% leaded (less carload factory)	lb.	.08%	@

YELLOW.

Cadmium, sulphide, yellow, light, orange	lb.	2.00	@
red	lb.	1.85	@
Chrome, light and medium	lb.	.27	@
Ochre, domestic	lb.	.02	@ .03%
imported	lb.	.04%	@ .06
Oil soluble aniline	lb.	1.20	@
Zinc chromate	lb.	.45	@ .48

COMPOUNDING INGREDIENTS.

Aluminum flake	ton	30.00	@
Aluminum oxide	lb.	*.18	@
Ammonia carbonate, powdered	ton	13%	@ .14
Asbestine (carloads)	ton	25.00	@
Asbestos (bags)	ton	35.00	@
Avonil compound	lb.	15	@
Barium, carbonate, precipitated	ton	65.00	@
sulphide, precipitated	lb.	.07	@
dust	lb.	.03%	@
Barytes, pure white	ton	33.50	@
off color	ton	15.50	@
uniform floated	ton	33.50	@
Basofo	lb.	.04	@
Blanc fixe	lb.	.04	@
Bone ash	lb.	.05	@
Chalk, precipitated, extra light	lb.	.05	@ .05%
precipitated, heavy	lb.	.04	@ .04%
China clay, domestic	ton	8.50	@ 20.00
imported	ton	18.00	@ 23.50
Shawnee	ton	15.00	@
Cork flour	lb.	.53	@
Cotton linters, clean mill run, f. o. b. factory	lb.	.04	@
Fossil flour (powdered)	ton	60.00	@
(botted)	ton	65.00	@
Diatomite	lb.	.03	@
high grade	lb.	.35	@ .40
medium	lb.	.16	@ .28
low grade	lb.	.12	@ .15
Graphite, flake (400-pound bbl.)	ton	10	@ .25
amorphous	lb.	.04	@ .08
Ground glass FF (bbls.)	lb.	.03	@
Infusorial earth (powdered)	ton	60.00	@
(botted)	ton	65.00	@
Mica, powdered	lb.	.03%	@ .06
Pumice stone, powdered (bbls.)	lb.	.02%	@ .04%
Rotten stone, powdered	lb.	*.20	@ .25
Rub-R-Glu	lb.	22.00	@ 40.00
Siler (silica)	lb.	22.00	@ 40.00
Starch, powdered corn (carload, bbls.)	cwt.	6.24	@
(carload, bags)	cwt.	6.02	@
Talc, powdered soapstone	ton	25.00	@
Tripoli earth, air-boated	ton	25.00	@
Tyre-lith	ton	85.00	@

Whiting, Alba (carloads).....	cent.	.80	@	.90
Columbia.....	cent.	.80	@	
commercial.....	cent.	1.25	@	1.30
English clifstone.....	cent.	1.50	@	2.00
gilders.....	cent.	1.30	@	1.35
Paris, white, American.....	cent.	1.35	@	1.50
Quaker.....	cent.	.70	@	.80
Wood pulp, imported.....	lb.	.03½	@	
Wood flour, American.....	lb.	.01½	@	

MINERAL RUBBER.

Gilsonite.....	lb.	.03½	@	
Genasoc (carloads factory).....	ton	55.00	@	
(less carloads factory).....	ton	57.00	@	
Hard hydrocarbon.....	ton	30.00	@	
K-X.....	ton	120.00	@	
K. M. R.....	ton	40.00	@	60.00
Pioneer, carload, factory.....	ton	50.00	@	
less carload, factory.....	ton	55.00	@	
Raven M. R.....	ton	.50	@	.70
Refined Elaterite.....	ton	175.00	@	
Richmond.....	ton	75.00	@	
No. 64.....	ton	44.00	@	
318/320 M. P. hydrocarbon.....	ton	50.00	@	
Robertson M. R. Special (carloads, factory).....	ton	80.00	@	
M. R. (carloads, factory).....	ton	55.00	@	
M. R. (less carloads, factory).....	ton	60.00	@	
Rubpron (carloads, factory).....	ton	50.00	@	
(less car, factory).....	ton	60.00	@	
Walpole rubber flux (factory).....	lb.	.05	@	

OILS.

Castor, No. 1, U. S. P.....	lb.	.23	@	
No. 3, U. S. P.....	lb.	.20	@	
Corn, refined Argo.....	cent.	28.56	@	
Cotton.....	cent.	.26	@	
Glycerine (98 per cent).....	lb.	.21	@	
Glycerole.....	lb.	.55	@	
Linseed, raw (carloads).....	gal.	2.22	@	
Linseed compound.....	gal.	*.85	@	
Palm (Niger).....	lb.	.17	@	
Peanut.....	lb.	.27	@	
Petrolatum.....	lb.	.06½	@	
Petroleum grease.....	lb.	.04¾	@	
Fine, steam distilled.....	gal.	.78	@	.96
Rapeseed, refined.....	gal.	1.60	@	
brown.....	lb.	.12	@	
Rosin.....	gal.	.93	@	1.10
Soya bean.....	lb.	.20	@	
Tar.....	gal.	.35	@	.38

RESINS AND PITCHES.

Castella gum.....	lb.	.55	@	
Tar, retort.....	gal.	.28	@	
kiln.....	gal.	.27	@	
Pitch, Burgundy.....	lb.	.09	@	
coal tar.....	lb.	.01	@	
pine tar.....	lb.	.04	@	
ponto.....	lb.	.14	@	
Resin, Pontianak, refined.....	lb.	None	@	
granulated.....	lb.	None	@	
fused.....	lb.	None	@	
Rosin, K.....	bbL	22.50	@	
Shellac, fine orange.....	lb.	1.30	@	

SOLVENTS.

Acetone (98.99 per cent drums).....	lb.	.15	@	
methyl (drums).....	gal.	1.10	@	
Benzol, water white.....	gal.	.24	@	
Beta-naphthol, resublimed.....	lb.	.95	@	
Carbon bisulphide (drums).....	gal.	.48	@	.58
ordinary grade.....	lb.	.95	@	
tetrachloride (drums).....	lb.	.10	@	.12
Naphtha, motor gasoline (steel bbls.).....	gal.	.24½	@	
73 @ 75 degrees (steel bbls.).....	gal.	.24	@	
68 @ 70 degrees (steel bbls.).....	gal.	None	@	
Solvent.....	gal.	.20	@	
V. M. & P. (steel bbls.).....	gal.	.23½	@	
Toluol, pure.....	gal.	.26	@	.30
Turpentine, spirits.....	gal.	1.73	@	
wood.....	gal.	1.68	@	
Osmaco reducer.....	gal.	.30	@	
Xylol, pure.....	gal.	.35	@	.40
commercial.....	gal.	.30	@	.35

SUBSTITUTES.

Black.....	lb.	10½	@	.20
White.....	lb.	1.2½	@	.23
Brown.....	lb.	.07	@	.23
Brown fatice.....	lb.	.09½	@	.21½
White fatice.....	lb.	1.15½	@	.22½
Paragol soft and mem (case).....	cent.	24.08	@	
hard.....	cent.	23.58	@	

VULCANIZING INGREDIENTS.

Lead, black hyposulphite (Black Hypo).....	lb.	.52	@	.56
Orange mineral, domestic.....	lb.	1.13½	@	
Sulphur chloride (drums).....	lb.	.06½	@	
Sulphur, flour, Brooklyn brand (carloads).....	cent.	2.90	@	
pure soft (carloads).....	cent.	2.90	@	
superfine (carloads, factory).....	cent.	2.50	@	

(See also Colors—Antimony)

WAXES.

Wax, beeswax, white.....	lb.	.70	@	
cerein, white.....	lb.	.15	@	.18
carnuba.....	lb.	.55	@	.60
ozokerite, black.....	lb.	.40	@	
montan.....	lb.	.78	@	.80
substitute.....	lb.	.35	@	
paraffine, refined 118/120 m. p. (cases).....	lb.	.08¾	@	
123/125 m. p. (cases).....	lb.	.08¾	@	
128/130 m. p. (cases).....	lb.	.09¾	@	

* Nominal.

THE MARKET FOR RUBBER SCRAP.

NEW YORK.

THE VOLUME OF BUSINESS in scrap rubber during the past month has been very limited. Since the removal of the English embargo on rubber scrap several weeks ago the movement of inner tubes has not gained appreciably.

Market conditions are not noticeably improving, although the rubber scrap dealers are hopeful of marked activity by October. BOOTS AND SHOES. There has been an off and on demand just sufficient to hold prices steady.

TIRES. This grade has not been called for to any great extent. There has been fair buying for picking purposes. Prices have been steady and firm for good stock.

INNER TUBES. The situation continues without interest.

QUOTATIONS FOR CARLOAD LOTS DELIVERED.

August 25, 1919.

Prices subject to change without notice.

BOOTS AND SHOES:

Arctic tops.....	lb.	.01	@	
Boots and shoes.....	lb.	.08¾	@	
Trimmed arctic.....	lb.	.06	@	.06½
Untrimmed arctic.....	lb.	.05½	@	

HARD RUBBER:

Battery jars, black compound.....	lb.	.01	@	
No. 1, bright fracture.....	lb.	.23	@	.24

INNER TUBES:

No. 1, old packing.....	lb.	.19	@	.20
No. 2.....	lb.	.10½	@	.10½
Red.....	lb.	.10	@	.10½

MECHANICALS:

Black scrap, mixed, No. 1.....	lb.	.03½	@	.04
Car springs.....	lb.	.03½	@	.04
Hells.....	lb.	.03	@	.03½
Hose shoe pulls.....	lb.	.03	@	.03½
Hose, air brake.....	lb.	.04½	@	
fire, cotton lined.....	lb.	.01½	@	.01¾
Insulated wire stripping, free from fiber.....	lb.	.01½	@	.01¾
Mattings.....	lb.	.01½	@	.01¾
Red scrap, No. 1.....	lb.	.05½	@	.06
No. 2.....	lb.	.09	@	.10
White scrap, No. 1.....	lb.	.06¾	@	.07½
No. 2.....	lb.	.10	@	.11
No. 3.....	lb.	.08	@	.09

TIRES:

PNEUMATIC—

Auto peelings, No. 1.....	lb.	.07	@	.08
No. 2.....	lb.	.05	@	.05½
Bicycle.....	lb.	.03	@	.03½
Standard white auto.....	lb.	.04¾	@	.05
Standard mixed auto.....	lb.	.04	@	
Stripped, ungumtreated.....	lb.	.03	@	
White, G. & G. M. & W., and U. S.....	lb.	.05	@	.05½

SOLID—

Carriage.....	lb.	.04	@	.04½
Irony.....	lb.	.01	@	
Truck.....	lb.	.04	@	.04½



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